INTRODUCTION

The tables in this crosswalk can be used to prepare a crosswalk of a state's regulations against the federal requirements applicable to Class VI wells. This table is applicable to reviews for states that do not already have primacy under Section 1422 and that are applying for Class VI only; i.e., the regulations that apply to other injection well classes are not included in this table.

Note that 40 CFR 145.11 lists provisions that a state must have legal authority to implement in order to obtain primacy; these provisions are highlighted in yellow in the table.

The following sections of the UIC regulations are included in this crosswalk (click on the hyperlinks to move through the document):

Part 124 PROCEDURES FOR DECISION MAKING

Part 144 UNDERGROUND INJECTION CONTROL PROGRAM

Subpart_A General Provisions

Subpart B General Program Requirements

Subpart_D Authorization by Permit

Subpart E Permit Conditions

Part 146 UNDERGROUND INJECTION CONTROL PROGRAM: CRITERIA AND STANDARDS

Subpart A General Provisions

Subpart H Criteria and Standards Applicable to Class VI Wells

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement	i?	
	GENERAL RE	QUIREMENTS			
1	PART 124PROCEDURES	FOR DECISION MAKING			
SUBPART AGENERAL PROGRAM REQUIREMENTS					
40 CFR 124.3 Application for a permit	1	,			
Applicable to State programs, see §§ 123.25 (NPDES), 145.11 (UIC), 233.26 (404), and 271.14 (RCRA). (1) Any person who requires a permit under the RCRA, UIC, NPDES, or PSD programs shall complete, sign, and submit to the Director an application for each permit required under §§ 270.1 (RCRA), 144.1 (UIC), 40 CFR 52.21 (PSD), and 122.1 (NPDES). Applications are not required for RCRA permits by rule (§ 270.60), underground injections authorized by rules (§§ 144.21 through 144.26), NPDES general permits (§ 122.28) and 404 general permits (§ 233.37).	40 CFR 124.3(a)(1)				Commented [N1]: OGC: Provisions highlighted in yellow are required under 40 CFR 145.11. Note that Sections 144.13, 144.14, 144.21-26, and 144.55 are required under 145.11, but are not included in this table because they do not apply to Class VI.
The Director shall not begin the processing of a permit until the applicant has fully complied with the application requirements for that permit. See §§ 270.10, 270.13 (RCRA), 144.31 (UIC), 40 CFR 52.21 (PSD), and 122.21 (NPDES). Permit applications (except for PSD permits) must comply with the	40 CFR 124.3(a)(2) 40 CFR 124.3(a)(3)				
signature and certification requirements of §§ 122.22 (NPDES), 144.32 (UIC), 233.6 (404), and 270.11 (RCRA).	40 CFR 124.3(a)(3)				Commented [N2]: 124.3(b) is "reserved." 124.3(c)-(g) appear to apply to EPA-issued permits only and are not included.
§ 124.5 Modification, revocation and reissuance, or termination	of permits.	_			
(Applicable to State programs, see §§ 123.25 (NPDES), 145.11 (UIC), 233.26 (404), and 271.14 (RCRA).) Permits (other than PSD permits) may be modified, revoked and reissued, or terminated either at the request of any interested person (including the permittee) or upon the Director's initiative. However, permits may only be modified, revoked and reissued, or terminated for the	40 CFR 124.5(a)				
reasons specified in § 122.62 or § 122.64 (NPDES), 144.39 or 144.40 (UIC), 233.14 or 233.15 (404), and 270.41 or 270.43 (RCRA). All requests shall be in writing and shall contain facts or reasons supporting the request.			,		Commented [CE3]: OGC: Note that 145.11 does not require an equivalent provision to this; however, this provision does seem to impose a requirement on states. Should it be included in the crosswalk? If so, suggest deleting language that refers to the Regional Administrator.
If the Director decides the request is not justified, he or she shall send the requester a brief written response giving a reason for the decision. Denials of requests for modification, revocation and	40 CFR 124.5(b)				(Note that in several places throughout the crosswalk have struck out language that refers to the Regional Administrator if it occurs in a provision that also contains state requirements. Please review.)

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
reissuance, or termination are not subject to public notice, comment, or hearings. Denials by the Regional Administrator may be informally appealed to the Environmental Appeals Board by a letter briefly setting forth the relevant facts. The Environmental Appeals Board may direct the Regional Administrator to begin modification, revocation and reissuance, or termination proceedings under paragraph (e) of this section. The appeal shall be considered denied if the Environmental Appeals Board takes no action on the letter within 60 days after receiving it. This informal appeal is, under 5 U.S.C. 704, a prerequisite to seeking judicial review of EPA action in denying a request for modification, revocation and reissuance, or termination.			
(Applicable to State programs, see 40 CFR 123.25 (NPDES), 145.11 (UIC), 233.26 (404), and 271.14 (RCRA)). (1) If the Director tentatively decides to modify or revoke and reissue a permit under 404 CFR 122.62 (NPDES), 144.39 (UIC), 233.14 (404), or 270.41 (other than § 270.41(b)(3)) or § 270.42(c) (RCRA), he or she shall prepare a draft permit under § 124.6 incorporating the proposed changes. The Director may request additional information and, in the case of a modified permit, may require the submission of an updated application. In the case of revoked and reissued permits, other than under 40 CFR 270.41(b)(3), the Director shall require the submission of a new application. In the case of revoked and reissued permits under 40 CFR 270.41(b)(3), the Director and the permittee shall comply with the appropriate requirements in 40 CFR part 124, subpart G for RCRA standardized permits.	40 CFR 124.5(c)(1)		
In a permit modification under this section, only those conditions to be modified shall be reopened when a new draft permit is prepared. All other aspects of the existing permit shall remain in effect for the duration of the unmodified permit. When a permit is revoked and reissued under this section, the entire permit is reopened just as if the permit had expired and was being reissued. During any revocation and reissuance proceeding the permittee shall comply with all conditions of the existing permit until a new final permit is reissued. "Minor modifications" as defined in §§ 122.63 (NPDES), 144.41	40 CFR 124.5(e)(2)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?	
(UIC), and 233.16 (404), and "Classes 1 and 2 modifications" as defined in § 270.42 (a) and (b) (RCRA) are not subject to the requirements of this section.				
(Applicable to State programs, see §§ 123.25 (NPDES) of this chapter, 145.11 (UIC) of this chapter, and 271.14 (RCRA) of this chapter.) (1) If the Director tentatively decides to terminate: A permit under § 144.40 (UIC) of this chapter, a permit under §§ 122.64(a) (NPDES) of this chapter or 270.43 (RCRA) of this chapter (for EPA-issued NPDES permits, only at the request of the permittee), or a permit under § 122.64(b) (NPDES) of this chapter where the permittee objects, he or she shall issue a notice of intent to terminate. A notice of intent to terminate is a type of draft permit which follows the same procedures as any draft permit prepared under § 124.6 of this chapter.	40 CFR 124.5(d)(1)			Commented [N4]: 124.5(d)(2)-(d)(3), and (e)-(g) do not apply to UIC or apply to EPA programs only and were not included.
§ 124.6 Draft permits.				
(Applicable to State programs, see §§ 123.25 (NPDES), 145.11 (UIC), 233.26 (404), and 271.14 (RCRA).) Once an application is complete, the Director shall tentatively decide whether to prepare a draft permit (except in the case of State section 404 permits for which no draft permit is required under § 233.39) or to deny the application.	40 CFR 124.6(a)			
If the Director tentatively decides to deny the permit application, he or she shall issue a notice of intent to deny. A notice of intent to deny the permit application is a type of draft permit which follows the same procedures as any draft permit prepared under this section. See § 124.6(e). If the Director's final decision (§ 124.15) is that the tentative decision to deny the permit application was incorrect, he or she shall withdraw the notice of intent to deny and proceed to prepare a draft permit under paragraph (d) of this section.				Commented [CE5]: OGC: Note that 145.11 does not require an equivalent provision to this; however, this provision does seem to impose a requirement on states. Should it be included in the crosswalk?
(Applicable to State programs, see §§ 123.25 (NPDES), 145.11 (UIC), 233.26 (404), and 271.14 (RCRA).) If the Director decides to prepare a draft permit, he or she shall prepare a draft permit that contains the following information:	40 CFR 124.6(d)			Commented [N6]: 124.6(c) not included as it is not applicable to UIC
All conditions under §§ 122.41 and 122.43 (NPDES), 144.51 and 144.42 (UIC, 233.7 and 233.8 (404, or 270.30 and 270.32 (RCRA)	40 CFR 124.6(d)(1)			

			State Citation and Regulatory Text (document title, page	Different From Federal Requirement	?	
ŀ	Federal Requirement	Federal Citation	number, section/paragraph)			
	(except for PSD permits)));					
	All compliance schedules under §§ 122.47 (NPDES), 144.53 (UIC), 233.10 (404), or 270.33 (RCRA) (except for PSD permits);	40 CFR 124.6(d)(2)				
	All monitoring requirements under §§ 122.48 (NPDES), 144.54 (UIC), 233.11 (404), or 270.31 (RCRA) (except for PSD permits); and	40 CFR 124.6(d)(3)				
	For:	40 CFR 124.6(d)(4)(ii)				Commented [N7]: 124.6(d)(4)(i), (iii), (iv), and (v) do not apply
	(ii) UIC permits, permit conditions under § 144.52;					to UIC, so they are not included.
	(Applicable to State programs, see §§ 123.25 (NPDES), 145.11 (UIC), 233.26 (404), and 271.14 (RCRA).) All draft permits prepared by EPA under this section shall be accompanied by a statement of basis (§ 124.7) or fact sheet (§ 124.8), and shall be based on the administrative record (§ 124.9), publicly noticed (§ 124.10) and made available for public comment (§ 124.11). The Regional Administrator shall give notice of opportunity for a public basing (§ 124.12), issue a final decision (§ 124.15) and respond to comments (§ 124.17). For RCRA, UIC or PSD permits an appeal may be taken under § 124.19 and, for NPDES permits, an appeal may be taken under § 124.74. Draft permits prepared by a State shall be accompanied by a fact sheet if required under § 124.8.	40 CFR 124.6(e)				

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement	t?	
§ 124.8 Fact sheet.					Commented [N8]: 124.7 and 124.9 appear to apply only to EPA
A fact sheet shall be prepared for every draft permit for a major HWM, UIC, 404, or NPDES facility or activity, for every Class I sludge management facility, for every 404 and NPDES general permit (§§ 237.37 and 122.28), for every NPDES draft permit that incorporates a variance or requires an explanation under §124.56(b), for every draft permit that includes a sewage sludge land application plan under 40 CFR 501.15(a)(2)(ix), and for every draft permit which the Director finds is the subject of wide-spread public interest or raises major issues. The fact sheet shall briefly set forth the principal facts and the significant factual, legal, methodological and policy questions considered in preparing the draft permit. The Director shall send this fact sheet to the applicant and, on request, to any other person.	40 CFR 124.8(a)				programs and are therefore not included.
The fact sheet shall include, when applicable:	40 CFR 124.8(b)				
A brief description of the type of facility or activity which is the subject of the draft permit;	40 CFR 124.8(b)(1)				
The type and quantity of wastes, fluids, or pollutants which are proposed to be or are being treated, stored, disposed of, injected, emitted, or discharged.	40 CFR 124.8(b)(2)				
A brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions and appropriate supporting references to the administrative record required by § 124.9 (for EPA-issued permits);	40 CFR 124.8(b)(4)				Commented [N9]: 124.8(b)(3) is not included as it is not applicable to UIC.
Reasons why any requested variances or alternatives to required standards do or do not appear justified;	40 CFR 124.8(b)(5)				
A description of the procedures for reaching a final decision on the draft permit including: (i) The beginning and ending dates of the comment period under § 124.10 and the address where comments will be received; (ii) Procedures for requesting a hearing and the nature of that hearing; and (iii) Any other procedures by which the public may participate in the final decision.	40 CFR 124.8(b)(6)				
Name and telephone number of a person to contact for additional information.	40 CFR 124.8(b)(7)				

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?	
Justification for waiver of any application requirements under § 122.21(j) or (q) of this chapter.	40 CFR 124.8(b)(9)			Commented [N10]: 124.8(b)(8) not included as it applies to NPDES only.
40 CFR 124.10 Public notice of permit actions and public comm	ent period.			Commented [N11]: OGC: Note that 145.11 requires equivalent
Scope. (1) The Director shall give public notice that the following actions have occurred:	40 CFR 124.10(a)(1)			provisions for only part of 124.10; however, these provisions do seem to impose a requirement on states. Should they be included in the crosswalk?
A permit application has been tentatively denied under § 124.6(b);	40 CFR 124.10(a)(1)(i)			
(Applicable to State programs, see §§ 123.25 (NPDES), 145.11 (UIC), 233.26 (404), and 271.14 (RCRA).) A draft permit has been prepared under § 124.6(d);	40 CFR 124.10(a)(1)(ii)			
(Applicable to State programs, see §§ 123.25 (NPDES), 145.11 (UIC), 233.26 (404) and 271.14 (RCRA)).) A hearing has been scheduled under § 124.12;	40 CFR 124.10(a)(1)(iii)			
An appeal has been granted under § 124.19(c);	40 CFR 124.10(a)(1)(iv)			Commented [N12]: 124.10(a)(1)(v) is not included as it does not apply to UIC.
No public notice is required when a request for permit modification, revocation and reissuance, or termination is denied under § 124.5(b). Written notice of that denial shall be given to the requester and to the permittee.	40 CFR 124.10(a)(2)			Commented [N13]: Did not include (a)(3) as it is not a requirement.
Timing (applicable to State programs, see §§ 123.25 (NPDES), 145.11 (UIC), 233.26 (404, and 271.14 (RCRA)). (1) Public notice of the preparation of a draft permit (including a notice of intent to deny a permit application) required under paragraph (a) of this section shall allow at least 30 days for public comment. For RCRA permits only, public notice shall allow at least 45 days for public comment. For EPA issued permits, if the Regional Administrator determines under 40 CTR part 6, subpart F that an Environmental impact Statement (FIS) shall be prepared for an NPDES new source, public notice of the draft permit chall not be given until after a draft IsIs is issued. (2) Public notice of a public hearing shall be given at least 30 days before the hearing. (Public notice of the hearing may be given at the same time as public notice of the draft permit and the two notices may be combined.)	40 CFR 124.10(b)			

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Methods (applicable to State programs, see 40 CFR 123.25 (NPDES), 145.11 (UIC), 233.23 (404), and 271.14 (RCRA)). Public notice of activities described in paragraph (a)(1) of this section shall be given by the following methods: (1) By mailing a copy of a notice to the following persons (any person otherwise entitled to receive notice under this paragraph may waive his or her rights to receive notice for any classes and categories of permits);	40 CFR 124.10(c)(1)		
The applicant (except for NPDES and 404 general permits when there is no applicant);	40 CFR 124.10(c)(1)(i)		
Any other agency which the Director knows has issued or is required to issue a RCRA, UIC, PSD (or other permit under the Clean Air Act), NPDES, 404, sludge management permit, or ocean dumping permit under the Marine Research Protection and Sanctuaries Act for the same facility or activity (including EPA when the draft permit is prepared by the State);	40 CFR 124.10(c)(1)(ii)		
Federal and State agencies with jurisdiction over fish, shellfish, and wildlife resources and over coastal zone management plans, the Advisory Council on Historic Preservation, State Historic Preservation Officers, including any affected States (Indian Tribes). (For purposes of this paragraph, and in the context of the Underground Injection Control Program only, the term State includes Indian Tribes treated as States.)	40 CFR 124.10(c)(1)(iii)		
Persons on a mailing list developed by: (A) Including those who request in writing to be on the list; (B) Soliciting persons for "area lists" from participants in past permit proceedings in that area; and (C) Notifying the public of the opportunity to be put on the mailing list through periodic publication in the public press and in such publications as Regional and State funded newsletters, environmental bulletins, or State law journals. (The Director may update the mailing list from time to time by requesting written indication of continued interest from those listed. The Director may delete from the list the name of any person who fails to respond to such a request.)	40 CFR 124.10(c)(1)(ix)		
(A) To any unit of local government having jurisdiction over the area where the facility is proposed to be located; and (B) to each State agency having any authority under State law with respect to	40 CFR 124.10(c)(1)(x)		

Commented [N14]: 124.10(c)(1)(iv)-(vii) do not apply to UIC, so they are not included. 124.10(c)(1)(viii) applies to Class I only and is not included.

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?	
the construction or operation of such facility.				
For Class VI injection well UIC permits, mailing or emailing a notice to State and local oil and gas regulatory agencies and State agencies regulating mineral exploration and recovery, the Director of the Public Water Supply Supervision program in the State, and all agencies that oversee injection wells in the State.	40 CFR 124.10(c)(1)(xi)			
For major permits, NPDES and 404 general permits, and permits that include sewage sludge land application plans under 40 CFR 501.15(a)(2)(ix), publication of a notice in a daily or weekly newspaper within the area affected by the facility or activity; and for EPA-issued NPDES general permits, in the FEDERAL REGISTER;	40 CFR 124.10(e)(2)(i)			Commented [N15]: 124.10(c)(2)(ii) applies to RCRA only and is not included.
When the program is being administered by an approved State, in a manner constituting legal notice to the public under State law; and	40 CFR 124.10(c)(3)			
Any other method reasonably calculated to give actual notice of the action in question to the persons potentially affected by it, including press releases or any other forum or medium to elicit public participation.	40 CFR 124.10(c)(4)			
Contents (applicable to State programs, see §§ 123.25 (NPDES), 145.11 (UIC), 233.26 (404), and 271.14 (RCRA))—(1) All public notices. All public notices issued under this part shall contain the following minimum information:	40 CFR 124.10(d)(1)			
Name and address of the office processing the permit action for which notice is being given;	40 CFR 124.10(d)(1)(i)			
Name and address of the permittee or permit applicant and, if different, of the facility or activity regulated by the permit, except in the case of NPDES and 404 draft general permits under §§ 122.28 and 233.37;	40 CFR 124.10(d)(1)(ii)			
A brief description of the business conducted at the facility or activity described in the permit application or the draft permit, for NPDES or 404 general permits when there is no application.	40 CFR 124.10(d)(1)(iii)			
Name, address and telephone number of a person from whom interested persons may obtain further information, including copies of the draft permit or draft general permit, as the case may be, statement of basis or fact sheet, and the application; and	40 CFR 124.10(d)(1)(iv)			

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement	t?	
A brief description of the comment procedures required by §§ 124.11 and 124.12 and the time and place of any hearing that will be held, including a statement of procedures to request a hearing (unless a hearing has already been scheduled) and other procedures by which the public may participate in the final permit decision.	40 CFR 124.10(d)(1)(v)				
Any additional information considered necessary or proper. Public notices for hearings. In addition to the general public notice described in paragraph (d)(1) of this section, the public notice of a hearing under § 124.12 shall contain the following information:	40 CFR 124.10(d)(1)(x) 40 CFR 124.10(d)(2)				Commented [N16]: 124.10(d)(1)(vi) applies to EPA-issued permits only and is not included. 124.10(d)(1)(vii)-(ix) don't apply to UIC and are not included.
Reference to the date of previous public notices relating to the permit; Date, time, and place of the hearing;	40 CFR 124.10(d)(2)(i) 40 CFR 124.10(d)(2)(ii)				
A brief description of the nature and purpose of the hearing, including the applicable rules and procedures;	40 CFR 124.10(d)(2)(iii)				Commented [CS17]: 124.10(d)(2)(iv) is not applicable to UIC and is not included.
(Applicable to State programs, see §§ 123.25 (NPDES), 145.11 (UIC), 233.26 (404), and 271.14 (RCRA).) In addition to the general public notice described in paragraph (d)(1) of this section, all persons identified in paragraphs (c)(1) (i), (ii), (iii), and (iv) of this section shall be mailed a copy of the fact sheet or statement of basis (for EPA-issued permits), the permit application (if any) and the draft permit (if any).	40 CFR 124.10(e)				
§ 124.11 Public comments and requests for public hearings.	I.	1			
(Applicable to State programs, see §§ 123.25 (NPDES), 145.11 (UIC), 233.26 (404), and 271.14 (RCRA).) During the public comment period provided under§ 124.10, any interested person may submit written comments on the draft permit or the permit application for 404 permits when no draft permit is required (see § 233.39) and may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. All comments shall be considered in making the final decision and shall be answered as provided in § 124.17.	40 CFR 124.11				

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requiremen	t?	
§ 124.12 Public hearings.					
(Applicable to State programs, see §§ 123.25 (NPDES), 145.11 (UIC), 233.26 (404), and 271.14 (RCRA).) (1) The Director shall hold a public hearing whenever he or she finds, on the basis of requests, a significant degree of public interest in a draft permit(s);	40 CFR 124.12(a)(1)				
The Director may also hold a public hearing at his or her discretion, whenever, for instance, such a hearing might clarify one or more issues involved in the permit decision:	40 CFR 124.12(a)(2)				
Public notice of the hearing shall be given as specified in § 124.10.	40 CFR 124.12(a)(4)				Commented [CS18]: 124.12(a)(3) is applicable to RCRA permits only and is not included. 124.12(b) applies to EPA programs
Any person may submit oral or written statements and data concerning the draft permit. Reasonable limits may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. The public comment period under § 124.10 shall automatically be extended to the close of any public hearing under this section. The hearing officer may also extend the comment period by so stating at the hearing.	40 CFR 124.12(c)				only and is not included.
A tape recording or written transcript of the hearing shall be made available to the public.	40 CFR 124.12(d)				
§ 124.17 Response to comments.					Commented [N19]: Rather than apply to states or EPA
(Applicable to State programs, see §§ 123.25 (NPDES), 145.11 (UIC), 233.26 (404), and 271.14 (RCRA).) At the time that any final permit decision is issued under § 124.15, the Director shall issue a response to comments. States are only required to issue a response to comments when a final permit is issued. This response shall:	40 CFR 124.17(a)				programs, 124.13 applies to people commenting on a draft permit and is not included. Sections 124.14-124.16 appear to apply to EPA programs only and are not included.
Specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and	40 CFR 124.17(a)(1)				
Briefly describe and respond to all significant comments on the draft permit or the permit application (for section 404 permits only) raised during the public comment period, or during any hearing.	40 CFR 124.17(a)(2)				

Federal Requirement (Applicable to State programs, see §§ 123.25 (NPDES), 145.11	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement		Commented [N20]: 124.17(b) applies to EPA-issued permits
(UIC), 233.26 (404), and 271.14 (RCRA).) The response to comments shall be available to the public.					only and was not included. Also, 124.18 and 124.19 appear to apply to regional programs only and were not included.
	144UNDERGROUND INJ	IECTION CONTROL PROGRAM			
SUBPART AGENERAL PROVISIONS					
40 CFR 144.1 Purpose and scope of Part 144.					Commented [N21]: Note that 144.1(f)(1)(viii) and 144.1(g)
40 CFR 144.3 Definitions.	1	1			were added or modified as part of the Class VI rule, but were not included here as they simply explain the provisions of the rule and
Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.				\ \ \	do not contain specific requirements for states. Commented [N22]: OGC: This list contains all definitions in
Application means the EPA standard national forms for applying for a permit, including any additions, revisions or modifications to the forms; or forms approved by EPA for use in approved States, including any approved modifications or revisions.					144.3 but includes the actual language only for those that are probably applicable to Class VI. Please review this approach.
Appropriate Act and regulations					
Approved State Program means a UIC program administered by the State or Indian Tribe that has been approved by EPA according to SDWA sections 1422 and/or 1425.					
Aquifer means a geological "formation," group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.					
Area of review Cesspool				-	Commented [N23]: This definition was not included because there is a new definition in 146.81.
Contaminant means any physical, chemical, biological, or radiological substance or matter in water.					
Director means the Regional Administrator, the State director or the Tribal director as the context requires, or an authorized representative. When there is no approved State or Tribal program, and there is an EPA administrated program, "Director" means the Regional Administrator. When there is an approved State or Tribal program, "Director" normally means the State or Tribal director. In some circumstances, however, EPA retains the authority to take certain actions even when there is an approved State or Tribal program. In such cases, the term "Director" means the Regional					

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Administrator and not the State or Tribal director.			
Draft permit means a document prepared under \$124.6 indicating the Director's tentative decision to issue or deny, modify, revoke and reissue, terminate, or reissue a "permit." A notice of intent to terminate a permit, and a notice of intent to deny a permit, as discussed in \$124.5 are types of "draft permits." A denial of a request for modification, revocation and reissuance, or termination, as discussed in \$124.5 is not a "draft permit."			
Drilling mud means a heavy suspension used in drilling an "injection well," introduced down the drill pipe and through the drill bit.			
Drywell			
Eligible Indian Tribe is a Tribe that meets the statutory requirements established at 42 U.S.C. 300j-11(b)(1).			
Emergency permit			
Environmental Protection Agency ("EPA") means the United States Environmental Protection Agency.			
Exempted aquifer means an "aquifer" or its portion that meets the criteria in the definition of "underground source of drinking water" but which has been exempted according to the procedures in §144.7.			
Existing injection well means an "injection well" other than a "new injection well."			
Facility or activity means any UIC "injection well," or an other facility or activity that is subject to regulation under the UIC program.			
Fluid means any material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state.			
Formation means a body of consolidated or unconsolidated rock characterized by a degree of lithologic homogeneity which is prevailingly, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.			

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
Formation fluid means "fluid" present in a "formation" under natural conditions as opposed to introduced fluids, such as "drilling mud."			
Generator			
Geologic sequestration means the long-term containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations. This term does not apply to carbon dioxide capture or transport.			
Ground water means water below the land surface in a zone of saturation.			
Hazardous waste means a hazardous waste as defined in 40 CFR 261.3.			
Hazardous waste management facility Improved sinkhole Indian lands			
Indian Tribe means any Indian Tribe having a Federally recognized governing body carrying out substantial governmental duties and powers over a defined area.			
Injection well means a "well" into which "fluids" are being injected.			
Injection zone Interstate Agency Major facility Manifest			C t
New injection wells means an "injection well" which began injection after a UIC program for the State applicable to the well is approved or prescribed.			
Owner or operator means the owner or operator of any "facility or activity" subject to regulation under the UIC program.			
Permit means an authorization, license, or equivalent control document issued by EPA or an approved State to implement the requirements of this part, parts 145, 146 and 124. "Permit" includes an area permit (§144.33) and an emergency permit (§144.34). Permit does not include UIC authorization by rule (§144.21), or			

Commented [N24]: This definition was not included because there is a different definition in 146.81.

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
any permit which has not yet been the subject of final agency action, such as a "draft permit."			
Person Plugging			
Point of injection means the last accessible sampling point prior to waste fluids being released into the subsurface environment through a Class V injection well. For example, the point of injection of a Class V septic system might be the distribution box—the last accessible sampling point before the waste fluids drain into the underlying soils. For a dry well, it is likely to be the well bore itself.			
Project Radioactive Waste			
RCRA means the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (Pub. L. 94–580, as amended by Pub. L. 95–609, Pub. L. 96–510, 42 U.S.C. 6901 et seq.).			
Regional Administrator means the Regional Administrator of the appropriate Regional Office of the Environmental Protection Agency or the authorized representative of the Regional Administrator.			
Sanitary waste Schedule of compliance			
SDWA means the Safe Drinking Water Act (Pub. L. 93–523, as amended; 42 U.S.C. 300f et seq.).			
Septic system			
Site means the land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity.			
State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands, the Commonwealth of the Northern Mariana Islands, or an Indian Tribe treated as a State.			

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
State Director means the chief administrative officer of any State, interstate, or Tribal agency operating an "approved program," or the delegated representative of the State director. If the responsibility is divided among two or more States, interstate, or Tribal agencies, "State Director" means the chief administrative officer of the State, interstate, or Tribal agency authorized to perform the particular procedure or function to which reference is made.			
State/EPA Agreement			
Stratum (plural strata) means a single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.			
Subsurface fluid distribution system			
Total dissolved solids means the total dissolved (filterable) solids as determined by use of the method specified in 40 CFR part 136.			
Transferee Transferor			
UIC means the Underground Injection Control program under Part C of the Safe Drinking Water Act, including an "approved State program."			
Underground injection means a "well injection."			
Underground source of drinking water (USDW) means an aquifer or its portion: (a)(1) Which supplies any public water system; or (2) Which contains a sufficient quantity of ground water to supply a public water system; and (i) Currently supplies drinking water for human consumption; or (ii) Contains fewer than 10,000 mg/l total dissolved solids; and (b) Which is not an exempted aquifer.			
Well means: A bored, drilled, or driven shaft whose depth is greater than the largest surface dimension; or, a dug hole whose depth is greater than the largest surface dimension; or, an improved sinkhole; or, a subsurface fluid distribution system.			
Well injection means the subsurface emplacement of fluids through			

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
a well.			
40 CFR 144.8 Noncompliance and program reporting by the Dir	rector.		
A detailed description of the State's implementation of its program;	40 CFR 144.8(b)(2)(i)(A)		
Suggested changes, if any to the program description (see § 145.23(f)) which are necessary to reflect more accurately the State's progress in issuing permits;	40 CFR 144.8(b)(2)(i)(B)		
An updated inventory of active underground injection operations in the State.	40 CFR 144.8(b)(2)(i)(C)		
In addition to complying with the requirements of paragraph (b)(2)(i) of this section, the Director shall provide the Administrator, on February 28 th and August 31st of each of the first two years of program operation, the information required in 40 CFR 146.15, 146.25, and 146.35.	40 CFR 144.8(b)(2)(ii)		
All Class VI program reports shall be consistent with reporting requirements set forth in §146.91 of this chapter.	40 CFR 144.8(b)(2)(iii)		
Schedule. (1) For all quarterly reports. On the last working day of May, August, November, and February, the State Director shall submit to the Regional Administrator information concerning noncompliance with permit requirements by major facilities in the State in accordance with the following schedule. The Regional Administrator shall prepare and submit information for EPA-issued permits to EPA Headquarters in accordance with the same schedule.	40 CFR 144.8(e)(1)		
QUARTERS COVERED BY REPORTS ON NONCOMPLIANCE BY MAJOR FACILITIES [Date for completion of reports] January, February, and March			
For all annual reports. The period for annual reports shall be for the calendar year ending December 31, with reports completed and	40 CFR 144.8(c)(2)		

	Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?			
L	available to the public no more than 60 days later.						
	SUBPART BGENERAL PROGRAM REQUIREMENTS						
Ī	40 CFR 144.11 Prohibition of unauthorized injection.						
	Any underground injection, except into a well authorized by rule or except as authorized by permit issued under the UIC program, is prohibited. The construction of any well required to have a permit is prohibited until the permit has been issued.	40 CFR 144.11					

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?	
40 CFR 144.12 Prohibition of movement of fluid into undergrou	nd sources of drinking wate	r.		
No owner or operator shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR part 142 or may otherwise adversely affect the health of persons. The applicant for a permit shall have the burden of showing that the requirements of this paragraph are met.	40 CFR 144.12(a)			
For Class I, II, III, and VI wells, if any water quality monitoring of an underground source of drinking water indicates the movement of any contaminant into the underground source of drinking water, except as authorized under part 146, the Director shall prescribe such additional requirements for construction, corrective action, operation, monitoring, or reporting (including closure of the injection well) as are necessary to prevent such movement. In the case of wells authorized by permit, these additional requirements shall be imposed by modifying the permit in accordance with §144.39, or the permit may be terminated under §144.40 if cause exists, or appropriate enforcement action may be taken if the permit has been violated. In the case of wells authorized by rulesce \$\$144.31 through 143.4 for EPA administered programs such inforcement action shall be taken in accordance with appropriate-sections of the SDWA.	40 CFR 144.12(b)			
Notwithstanding any other provision of this section, the Director may take emergency action upon receipt of information that a contaminant which is present in or likely to enter a public water system or underground source of drinking water may present an imminent and substantial endangerment to the health of persons. If the Director is an EPA official, he must first determine that the appropriate State and local authorities have not taken appropriate action to protect the health of such persons, before taking emergency action.	40 CFR 144.12(e)			Commented [N25]: 144.12(c) and (d) are not applicable to Class VI and are not included.
40 CFR 144.15 Prohibition of non-experimental Class V wells fo	r geologic sequestration.			Commented [N26]: 144.13 prohibits Class IV, 144.14 applies
The construction, operation or maintenance of any non-	40 CFR 144.15			to wells injecting hazardous waste. These provisions do not apply to states that are only applying for Class VI primacy, so they were not included.

		State Citation and Regulatory Text (document title, page	Different From Federal Requirement?
Federal Requirement	Federal Citation	number, section/paragraph)	
experimental Class V geologic sequestration well is prohibited.			
40 CFR 144.18 Requirements for Class VI wells.			
Owners or operators of Class VI wells must obtain a permit. Class VI wells cannot be authorized by rule to inject carbon dioxide.	40 CFR 144.18		
40 CFR 144.19 Transitioning from Class II to Class VI.			
Owners or operators that are injecting carbon dioxide for the primary purpose of long- term storage into an oil and gas reservoir must apply for and obtain a Class VI geologic sequestration permit when there is an increased risk to USDWs compared to Class II operations. In determining if there is an increased risk to USDWs, the owner or operator must consider the factors specified in §144.19(b).	40 CFR 144.19(a)		
The Director shall determine when there is an increased risk to USDWs compared to Class II operations and a Class VI permit is required. In order to make this determination the Director must consider the following:	40 CFR 144.19(b)		
Increase in reservoir pressure within the injection zone(s);	40 CFR 144.19(b)(1)		
ncrease in carbon dioxide injection rates;	40 CFR 144.19(b)(2)		
Decrease in reservoir production rates;	40 CFR 144.19(b)(3)		
Distance between the injection zone(s) and USDWs;	40 CFR 144.19(b)(4)		
Suitability of the Class II area of review delineation;	40 CFR 144.19(b)(5)		
Quality of abandoned well plugs within the area of review;	40 CFR 144.19(b)(6)		
The owner's or operator's plan for recovery of carbon dioxide at he cessation of injection;	40 CFR 144.19(b)(7)		
The source and properties of injected carbon dioxide; and	40 CFR 144.19(b)(8)		
Any additional site-specific factors as determined by the Director.	40 CFR 144.19(b)(9)		
SUBPART DAUTHORIZATION BY PERMIT			
40 CFR 144.31 Application for a permit; authorization by perm	<mark>it.</mark>		
Permit application. Unless an underground injection well is authorized by rule under subpart C of this part, all injection activities including construction of an injection well are prohibited	40 CFR 144.31(a)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
until the owner or operator is authorized by permit. An owner or operator of a well currently authorized by rule must apply for a permit under this section unless well authorization by rule was for the life of the well or project. Authorization by rule for a well or project for which a permit application has been submitted terminates for the well or project upon the effective date of the permit. Procedures for applications, issuance and administration of emergency permits are found exclusively in § 144.34. A RCRA permit applying the standards of part 264, subpart C of this chapter will constitute a UIC permit for hazardous waste injection wells for which the technical standards in part 146 of this chapter are not generally appropriate.			
Who applies? When a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit.	40 CFR 144.31(b)		
Time to apply. Any person who performs or proposes an underground injection for which a permit is or will be required shall submit an application to the Director in accordance with the UIC program as follows:	40 CFR 144.31(c)		
For existing wells, as expeditiously as practicable and in accordance with the schedule in any program description under § 145.23(f) or (for EPA administered programs) on a schedule established by the Regional Administrator, but no later than 4 years from the approval or promulgation of the UIC program—or as required under § 144.14(b) for wells injecting hazardous waste. For EPA administered programs the owner or operator of Class I or III wells shall submit a complete permit application no later than I year after the effective date of the program.	40 CFR 144.31(c)(1)		
For new injection wells, except new wells in projects authorized under § 144.21(d) or authorized by an existing area permit under § 144.33(c), a reasonable time before construction is expected to begin.	40 CFR 144.31(c)(2)		
Completeness. The Director shall not issue a permit before receiving a complete application for a permit except for emergency permits. An application for a permit is complete when the Director receives an application form and any supplemental information	40 CFR 144.31(d)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
which are completed to his or her satisfaction. The completeness of any application for a permit shall be judged independently of the status of any other permit application or permit for the same facility or activity. For EPA administered programs, an application which is reviewed under § 124.3 is complete when the Director receives either a complete application or the information listed in a native of definitions.			
Information requirements. All applicants for Class I, II, III, and V permits shall provide the following information to the Director, using the application form provided by the Director. Applicants for Class VI permits shall follow the criteria provided in §146.82 of this chapter.	40 CFR 144.31(e)		
The activities conducted by the applicant which require it to obtain permits under RCRA, UIC, the National Pollution Discharge Elimination system (NPDES) program under the Clean Water Act, or the Prevention of Significant Deterioration (PSD) program under the Clean Air Act.	40 CFR 144.31(e)(1)		i
Name, mailing address, and location of the facility for which the application is submitted.	40 CFR 144.31(e)(2)		
Up to four SIC codes which best reflect the principal products or services provided by the facility.	40 CFR 144.31(e)(3)		
The operator's name, address, telephone number, ownership status, and status as Federal, State, private, public, or other entity.	40 CFR 144.31(e)(4)		
Whether the facility is located on Indian lands.	40 CFR 144.31(e)(5)		
A listing of all permits or construction approvals received or applied for under any of the following programs:	40 CFR 144.31(e)(6)		
Hazardous Waste Management program under RCRA.	40 CFR 144.31(e)(6)(i)		
UIC program under SDWA.	40 CFR 144.31(e)(6)(ii)		
NPDES program under CWA.	40 CFR 144.31(e)(6)(iii)		
Prevention of Significant Deterioration (PSD) program under the Clean Air Act.	40 CFR 144.31(e)(6)(iv)		
Nonattainment program under the Clean Air Act.	40 CFR 144.31(e)(6)(v)		

Commented [N29]: 144.31(e)(1)-(6) are not required above (see "Applicants for Class VI permits shall follow criteria provided in 146.82") but 146.82 refers back to (e)(1)-(6). 144.31(e)(7)-(10) are not required for Class VI so they are not included.

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under the Clean Air Act.	40 CFR 144.31(e)(6)(vi)		
Ocean dumping permits under the Marine Protection Research and Sanctuaries Act.	40 CFR 144.31(e)(6)(vii)		
Dredge and fill permits under section 404 of CWA.	40 CFR 144.31(e)(6)(viii)		
Other relevant environmental permits, including State permits.	40 CFR 144.31(e)(6)(ix)		
§ 144.32 Signatories to permit applications and reports.			
Applications. All permit applications, except those submitted for Class II wells (see paragraph (b) of this section), shall be signed as follows:	40 CFR 144.32(a)		
For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means;	40 CFR 144.32(a)(1)		
A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decisionmaking functions for the corporation, or	40 CFR 144.32(a)(1)(i)		
the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. NOTE: EPA does not require specific assignments or delegations of authority to responsible corporate officers identified in § 144.32(a)(1)(i). The Agency will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the Director to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions under § 144.32(a)(1)(ii) rather than to specific individuals.	40 CFR 144.32(a)(1)(ii)		
For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or	40 CFR 144.32(a)(2)		
For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For	40 CFR 144.32(a)(3)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
purposes of this section, a principal executive officer of a Federal agency includes:			
The chief executive officer of the agency, or	40 CFR 144.32(a)(3)(i)		
a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).	40 CFR 144.32(a)(3)(ii)		
Reports. All reports required by permits, other information requested by the Director, and all permit applications submitted for Class II wells under § 144.31 shall be signed by a person described in paragraph (a) of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if.	40 CFR 144.32(b)		
The authorization is made in writing by a person described in paragraph (a) of this section;	40 CFR 144.32(b)(1)		
The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and	40 CFR 144.32(b)(2)		
The written authorization is submitted to the Director.	40 CFR 144.32(b)(3)		
Changes to authorization. If an authorization under paragraph (b) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (b) of this section must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.	40 CFR 144.32(c)		
Certification. Any person signing a document under paragraph (a) or (b) of this section shall make the following certification: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the	40 CFR 144.32(d)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?	
person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.				
40 CFR 144.33 Area permits.				
The Director may issue a permit on an area basis, rather than for each well individually, provided that the permit is for injection wells:	40 CFR 144.33(a)			Commented [CE30]: 144.33(a)(1)-(a)(4) were not included as they do not apply to Class VI.
Other than Class VI wells.	40 CFR 144.33(a)(5)			Commented [N31]: Did not include (b)-(d) since they address
40 CFR 144.34 Emergency permits.				area permit conditions, and (a)(5) does not allow area permits for Class VI.
Coverage. Notwithstanding any other provision of this part or part 124, the Director may temporarily permit a specific underground injection if:	40 CFR 144.34(a)			
An imminent and substantial endangerment to the health of persons will result unless a temporary emergency permit is granted; or	40 CFR 144.34(a)(1)			Commented [N32]: 144.34(a)(2) and (a)(3) and (b)(2) and (b)(3) apply to Class II and were not included.
Requirements for issuance.	40 CFR 144.34(b)			
Any temporary permit under paragraph (a)(1) of this section shall be for no longer term than required to prevent the hazard.	40 CFR 144.34(b)(1)			
Notice of any temporary permit under this paragraph shall be published in accordance with § 124.11 within 10 days of the issuance of the permit.	40 CFR 144.34(b)(4)			
The temporary permit under this section may be either oral or written. If oral, it must be followed within 5 calendar days by a written temporary emergency permit.	40 CFR 144.34(b)(5)			
The Director shall condition the temporary permit in any manner he or she determines is necessary to ensure that the injection will not result in the movement of fluids into an underground source of drinking water.	40 CFR 144.34(b)(6)			
§ 144.35 Effect of a permit.				

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Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?	
Except for Class II and III wells, compliance with a permit during its term constitutes compliance, for purposes of enforcement, with Part C of the SDWA. However, a permit may be modified, revoked and reissued, or terminated during its term for cause as set forth in §§ 144.39 and 144.40.	40 CFR 144.35(a)	number, section paragraphs		
The issuance of a permit does not convey any property rights of any sort, or any exclusive privilege.	40 CFR 144.35(b)			
The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.	40 CFR 144.35(c)			
40 CFR 144.36 Duration of permits.				
Permits for Class I and V wells shall be effective for a fixed term not to exceed 10 years. UIC permits for Class II and III wells shall be issued for a period up to the operating life of the facility. UIC permits for Class VI wells shall be issued for the operating life of the facility and the post-injection site care period. The Director shall review each issued Class II, III, and VI well UIC permit at least once every 5 years to determine whether it should be modified, revoked and reissued, terminated or a minor modification made as provided in §§144.39, 144.40, or 144.41.	40 CFR 144,36(a)			
Except as provided in § 144.37, the term of a permit shall not be extended by modification beyond the maximum duration specified in this section.	40 CFR 144.36(b)			
The Director may issue any permit for a duration that is less than the full allowable term under this section.	40 CFR 144.36(c)			
40 CFR 144.38 Transfer of permits.				Commented [N33]: Did not include 144.37 as it see
Transfers by modification. Except as provided in paragraph (b) of this section, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued (under § 144.39(b)(2)), or a minor modification made (under § 144.41(d)), to identify the new permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act.	40 CFR 144.38(a)			to EPA-issued permits only.
40 CFR 144.39 Modification or revocation and reissuance of peri	mits.			

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
When the Director receives any information (for example, inspects the facility, receives information submitted by the permittee as required in the permit (see § 144.51 of this chapter), receives a request for modification or revocation and reissuance under § 124.5, or conducts a review of the permit file) he or she may determine whether or not one or more of the causes listed in paragraphs (a) and (b) of this section for modification or revocation and reissuance or both exist. If cause exists, the Director may modify or revoke and reissue the permit accordingly, subject to the limitations of paragraph (c) of this section, and may request an updated application if necessary. When a permit is modified, only the conditions subject to modification are reopened. If a permit is revoked and reissued, the entire permit is reopened and subject to revision and the permit is reissued for a new term. See § 124.5(c)(2) of this chapter. If cause does not exist under this section or § 144.41 of this chapter, the Director shall not modify or revoke and reissue the permit. If a permit modification satisfies the criteria in § 144.41 for "minor modifications" the permit may be modified without a draft permit or public review. Otherwise, a draft permit must be prepared and other procedures in part 124 must be followed.	40 CFR 144.39		
Causes for modification. The following are causes for modification. For Class I hazardous waste injection wells, Class II, Class III or Class VI wells the following may be causes for revocation and reissuance as well as modification; and for all other wells the following may be cause for revocation or reissuance as well as modification when the permittee requests or agrees.	40 CFR 144.39(a)		
Alterations. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.	40 CFR 144.39(a)(1)		
Information. The Director has received information. Permits other than for Class II and III wells may be modified during their terms for this cause only if the information was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and would have justified the application of different permit conditions at the time of issuance. For UIC area permits (§	40 CFR 144.39(a)(2)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?	
144.33), this cause shall include any information indicating that cumulative effects on the environment are unacceptable.				
New regulations. The standards or regulations on which the permit was based have been changed by promulgation of new or amended standards or regulations or by judicial decision after the permit was issued. Permits other than for Class I hazardous waste injection wells, Class II, Class III or Class VI wells may be modified during their permit terms for this cause only as follows:	40 CFR 144.39(a)(3)			Commented [N34]: Did not include (a)(3)(i) and (ii) because they are not applicable. They list the conditions under which permits can be modified when new regulations are promulgated, but they are not applicable because the Class VI rule does not allow permits to be modified in response to new rules.
Compliance schedules. The Director determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonably available remedy. See also § 144.41(c) (minor modifications).	40 CFR 144.39(a)(4)			
Basis for modification of Class VI permits. Additionally, for Class VI wells, whenever the Director determines that permit changes are necessary based on:	40 CFR 144.39(a)(5)			
Area of review reevaluations under §146.84(e)(1) of this chapter; Any amendments to the testing and monitoring plan under §146.90(j) of this chapter;	40 CFR 144.39(a)(5)(i) 40 CFR 144.39(a)(5)(ii)			
Any amendments to the injection well plugging plan under §146.92(c) of this chapter;	40 CFR 144.39(a)(5)(iii)			
Any amendments to the post-injection site care and site closure plan under §146.93(a)(3) of this chapter;	40 CFR 144.39(a)(5)(iv)			
Any amendments to the emergency and remedial response plan under §146.94(d) of this chapter; or	40 CFR 144.39(a)(5)(v)			
A review of monitoring and/or testing results conducted in accordance with permit requirements.	40 CFR 144.39(a)(5)(vi)			
Causes for modification or revocation and reissuance. The following are causes to modify or, alternatively, revoke and reissue a permit:	40 CFR 144.39(b)			
Cause exists for termination under § 144.40, and the Director determines that modification or revocation and reissuance is appropriate.	40 CFR 144.39(b)(1)			

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?	
The Director has received notification (as required in the permit, see § 144.41(d)) of a proposed transfer of the permit. A permit also may be modified to reflect a transfer after the effective date of an automatic transfer (§ 144.38(b)) but will not be revoked and reissued after the effective date of the transfer except upon the request of the new permittee.	40 CFR 144.39(b)(2)			
A determination that the waste being injected is a hazardous waste as defined in § 261.3 either because the definition has been revised, or because a previous determination has been changed.	40 CFR 144.39(b)(3)			
Facility siting. Suitability of the facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.	40 CFR 144.39(c)			
40 CFR 144.40 Termination of permits.				
The Director may terminate a permit during its term, or deny a permit renewal application for the following causes:	40 CFR 144.40(a)			
Noncompliance by the permittee with any condition of the permit;	40 CFR 144.40(a)(1)			
The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; or	40 CFR 144.40(a)(2)			
A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination;	40 CFR 144.40(a)(3)			
The Director shall follow the applicable procedures in part 124 in terminating any permit under this section.	40 CFR 144.40(b)			
40 CFR 144.41 Minor modifications of permits.				
Upon the consent of the permittee, the Director may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this section, without following the procedures of part 124. Any permit modification not processed as a minor modification under this section must be made for cause and with part 124 draft permit and public notice as required in § 144.39. Minor modifications may only:	40 CFR 144.41			

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?	
Correct typographical errors;	40 CFR 144.41(a)			
Require more frequent monitoring or reporting by the permittee;	40 CFR 144.41(b)			
Change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement; or	40 CFR 144.41(c)			
Allow for a change in ownership or operational control of a facility where the Director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the Director.	40 CFR 144.41(d)			
Change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the Director, would not interfere with the operation of the facility or its ability to meet conditions described in the permit and would not change its classification.	40 CFR 144.41(e)			
Change construction requirements approved by the Director pursuant to § 144.52(a)(1) (establishing UIC permit conditions), provided that any such alteration shall comply with the requirements of this part and part 146.	40 CFR 144.41(f)			
Amend a plugging and abandonment plan which has been updated under § 144.52(a)(6).	40 CFR 144.41(g)			
Amend a Class VI injection well testing and monitoring plan, plugging plan, post-injection site care and site closure plan, or emergency and remedial response plan where the modifications merely clarify or correct the plan, as determined by the Director.	40 CFR 144.41(h)			
SUBPART EPERMIT CONDITIONS				
40 CFR 144.51 Conditions applicable to all permits.				
The following conditions apply to all UIC permits. All conditions applicable to all permits shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to these regulations (or the corresponding approved State regulations) must be given in the permit.	40 CFR 144.51			

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
Duty to comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Safe Drinking Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application; except that the permittee need not comply with the provisions of this permit to the extent and for the duration such noncompliance is authorized in an emergency permit under §144.34.	40 CFR 144.51(a)		
Duty to reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.	40 CFR 144.51(b)		
Need to halt or reduce activity not a defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.	40 CFR 144.51(c)		
Duty to mitigate. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.	40 CFR 144.51(d)		
Proper operation and maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.	40 CFR 144.51(e)		
Permit actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.	40 CFR 144.51(f)		
Property rights. This permit does not convey any property rights of any sort, or any exclusive privilege.	40 CFR 144.51(g)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
Duty to provide information. The permittee shall furnish to the Director, within a time specified, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.	40 CFR 144.51(h)		
Inspection and entry. The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:	40 CFR 144.51(i)		
Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit:	40 CFR 144.51(i)(1)		
Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;	40 CFR 144.51(i)(2)		
Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and	40 CFR 144.51(i)(3)		
Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any location.	40 CFR 144.51(i)(4)		
Monitoring and records. (1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.	40 CFR 144.51(j)(1)		
The permittee shall retain records of all monitoring information, including the following:	40 CFR 144.51(j)(2)		
Calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time; and	40 CFR 144.51(j)(2)(i)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
The nature and composition of all injected fluids until three years after the completion of any plugging and abandonment procedures specified under §144.52(a)(6), or under part 146 subpart G as appropriate. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period. For EPA administered programs, the owner or operator shall continue to retain the records after the three year retention entitle unless the delivers the records to the Regional Administrator to discard the records.	40 CFR 144.51(j)(2)(ii)		
Records of monitoring information shall include:	40 CFR 144.51(j)(3)		
The date, exact place, and time of sampling or measurements;	40 CFR 144.51(j)(3)(i)		
The individual(s) who performed the sampling or measurements;	40 CFR 144.51(j)(3)(ii)		
The date(s) analyses were performed;	40 CFR 144.51(j)(3)(iii)		
The individual(s) who performed the analyses;	40 CFR 144.51(j)(3)(iv)		
The analytical techniques or methods used; and	40 CFR 144.51(j)(3)(v)		
The results of such analyses.	40 CFR 144.51(j)(3)(vi)		
Owners or operators of Class VI wells shall retain records as specified in subpart H of part 146, including §§146.84(g), 146.91(f), 146.92(d), 146.93(f), and 146.93(h) of this chapter.	40 CFR 144.51(j)(4)		
Signatory requirement. All applications, reports, or information submitted to the Administrator shall be signed and certified. (See §144.32.)	40 CFR 144.51(k)		
Reporting requirements. (1) Planned changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.	40 CFR 144.51(l)(1)		
Anticipated noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.	40 CFR 144.51(l)(2)		
Transfers. This permit is not transferable to any person except after notice to the Director. The Director may require modification or	40 CFR 144.51(l)(3)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act. (See §144.38; in some cases, modification or revocation and reissuance is mandatory.)			
Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.	40 CFR 144.51(l)(4)		
Compliance schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 30 days following each schedule date.	40 CFR 144.51(l)(5)		
Twenty-four hour reporting. The permittee shall report any noncompliance which may endanger health or the environment, including:	40 CFR 144.51(1)(6)		
Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW; or	40 CFR 144.51(l)(6)(i)		
Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between USDWs.	40 CFR 144.51(l)(6)(ii)		
Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.			
Other noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs (l) (4), (5), and (6) of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (l)(6) of this section.	40 CFR 144.51(1)(7)		
Other information. Where the permittee becomes aware that it	40 CFR 144.51(l)(8)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.			
Requirements prior to commencing injection. Except for all new wells authorized by an area permit under §144.33(c), a new injection well may not commence injection until construction is complete, and	40 CFR 144.51(m)		
The permittee has submitted notice of completion of construction to the Director; and	40 CFR 144.51(m)(1)		
The Director has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of the permit; or	40 CFR 144.51(m)(2)(i)		
The permittee has not received notice form the Director of his or her intent to inspect or otherwise review the new injection well within 13 days of the date of the notice in paragraph (m)(1) of this section, in which case prior inspection or review is waived and the permittee may commence injection. The Director shall include in his notice a reasonable time period in which he shall inspect the well.	40 CFR 144.51(m)(2)(ii)		
The permittee shall notify the Director at such times as the permit requires before conversion or abandonment of the well or in the case of area permits before closure of the project.	40 CFR 144.51(n)		
A Class I, II or III permit shall include and a Class V permit may include conditions which meet the applicable requirements of §146.10 of this chapter to ensure that plugging and abandonment of the well will not allow the movement of fluids into or between USDWs. Where the plan meets the requirements of §146.10 of this chapter, the Director shall incorporate the plan into the permit as a permit condition. Where the Director's review of an application indicates that the permittee's plan is inadequate, the Director may require the applicant to revise the plan, prescribe conditions meeting the requirements of this paragraph, or deny the permit. A Class VI permit shall include conditions which meet the requirements set forth in §146.92 of this chapter. Where the plan meets the requirements of §146.92 of this chapter, the Director	40 CFR 144.51(o)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement	?
shall incorporate it into the permit as a permit condition. For purposes of this paragraph, temporary or intermittent cessation of injection operations is not abandonment.				
Plugging and abandonment report. For EPA-administered programs, within 60 days after plugging a well or at the time of the next quarterly report (whichever is less) the owner or operator shall submit a report to the Regional Administrator. If the quarterly report is due less than 15 days before completion of plugging, then the report shall be submitted within 60 days. The report shall be certified as accurate by the person who performed the plugging operation. Such report shall consist of either:	40 CFR 144.51(p)			Commented [N35]: OGC: Please review. 144.51(p) appears to apply to EPA-issued permits only, although 145.11 cites all of 144.51 as a requirement for primacy, and the beginning of 144.51 says that the requirements in that section apply to all UIC permits. There does not appear to be another provision in 144 that lists plugging and abandonment requirements. However, 146.92, which covers plugging for Class VI, might supercede this provision. Should this provision be deleted?
A statement that the well was plugged in accordance with the plan previously submitted to the Regional Administrator; or	40 CFR 144.51(p)(1)			
Where actual plugging differed from the plan previously submitted, and updated version of the plan on the form supplied by the regional administrator, specifying the differences.	40 CFR 144.51(p)(2)			
Duty to establish and maintain mechanical integrity. The owner or operator of a Class I, II, III or VI well permitted under this part shall establish mechanical integrity prior to commencing injection or on a schedule determined by the Director. Thereafter the owner or operator of Class I, II, and III wells must maintain mechanical integrity as defined in §146.8 of this chapter and the owner or operator of Class VI wells must maintain mechanical integrity as defined in §146.89 of this chapter. For EPA administered programs, the Regional Administrator may require by written notice that the owner or operator comply with a schedule describing when mechanical integrity demonstrations shall be made.	40 CFR 144.51(q)(1)			
When the Director determines that a Class I, II, III or VI well lacks mechanical integrity pursuant to §§146.8 or 146.89 of this chapter for Class VI of this chapter, he/she shall give written notice of his/her determination to the owner or operator. Unless the Director requires immediate cessation, the owner or operator shall cease injection into the well within 48 hours of receipt of the Director's determination. The Director may allow plugging of the well pursuant to the requirements of §146.10 of this chapter or require the permittee to perform such additional construction, operation,	40 CFR 144.51(q)(2)			

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
monitoring, reporting and corrective action as is necessary to prevent the movement of fluid into or between USDWs caused by the lack of mechanical integrity. The owner or operator may resume injection upon written notification from the Director that the owner or operator has demonstrated mechanical integrity pursuant to §146.8 of this chapter.			
40 CFR 144.52 Establishing permit conditions.			
In addition to conditions required in §144.51, the Director shall establish conditions, as required on a case-by-case basis under §144.36 (duration of permits), §144.53(a) (schedules of compliance), §144.54 (monitoring), and for 174 permits only \$144.53(b) (alternate schedules of compliance), and §144.4 (considerations under Jedenal Law). Permits for owners or operators of hazardous waste injection wells shall include conditions meeting the requirements of §144.14 (requirements for wells injecting hazardous waste), paragraphs (a)(7) and (a)(9) of this section, and subpart G of part 146. Permits for owners or operators of Class VI injection wells shall include conditions meeting the requirements of subpart H of part 146. Permits for other wells shall contain the following requirements, when applicable.	40 CFR 144.52(a)		
Construction requirements as set forth in part 146. Existing wells shall achieve compliance with such requirements according to a compliance schedule established as a permit condition. The owner or operator of a proposed new injection well shall submit plans for testing, drilling, and construction as part of the permit application. Except as authorized by an area permit, no construction may commence until a permit has been issued containing construction requirements (see §144.11). New wells shall be in compliance with these requirements prior to commencing injection operations. Changes in construction plans during construction may be approved by the Administrator as minor modifications (§144.41). No such changes may be physically incorporated into construction of the well prior to approval of the modification by the Director.	40 CFR 144.52(a)(1)		
1 11	40 CFR 144.52(a)(2)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
Operation requirements as set forth in 40 CFR part 146; the permit shall establish any maximum injection volumes and/or pressures necessary to assure that fractures are not initiated in the confining zone, that injected fluids do not migrate into any underground source of drinking water, that formation fluids are not displaced into any underground source of drinking water, and to assure compliance with the part 146 operating requirements.	40 CFR 144.52(a)(3)		
Requirements for wells managing hazardous waste, as set forth in §144.14.	40 CFR 144.52(a)(4)		
Monitoring and reporting requirements as set forth in 40 CFR part 146. The permittee shall be required to identify types of tests and methods used to generate the monitoring data. For EPA administered programs, monitoring of the nature of injected fluids shall comply with applicable analytical methods cited and described in table 1 of 40 CFR 136.3 or in appendix III of 40 CFR part 261 or in certain circumstances by other methods that have been approved by the Regional Administrator.	40 CFR 144.52(a)(5)		
After a cessation of operations of two years the owner or operator shall plug and abandon the well in accordance with the plan unless he:	40 CFR 144.52(a)(6)		
Provides notice to the Regional Administrator;	40 CFR 144.52(a)(6)(i)		
Describes actions or procedures, satisfactory to the Regional Administrator, that the owner or operator will take to ensure that the well will not endanger USDWs during the period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived by the Regional Administrator.	40 CFR 144.52(a)(6)(ii)		
Financial responsibility. (i) The permittee, including the transferor of a permit, is required to demonstrate and maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner prescribed by the Director until:	40 CFR 144.52(a)(7)(i)		
The well has been plugged and abandoned in accordance with an approved plugging and abandonment plan pursuant to §§144.51(o), 146.10, and 146.92 of this chapter, and submitted a plugging and abandonment report pursuant to §144.51(p); or	40 CFR 144.52(a)(7)(i)(A)		

Commented [N36]: OGC: please review. 144.52(a)(6) appears to apply to Regions only, but it also seems to be the only section of the UIC regulations that addresses and defines temporary abandonment. Additionally, 145.11 lists all of 144.52 as a requirement for primacy. Should this provision be kept or deleted?

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
The well has been converted in compliance with the requirements of §144.51(n); or	40 CFR 144.52(a)(7)(i)(B)		
The transferor of a permit has received notice from the Director that the owner or operator receiving transfer of the permit, the new permittee, has demonstrated financial responsibility for the well.	40 CFR 144.52(a)(7)(i)(C)		
The permittee shall show evidence of such financial responsibility to the Director by the submission of a surety bond, or other adequate assurance, such as a financial statement or other materials acceptable to the Director. For LPA administered programs, the Regional Administrator may on a periodic basic require the holder of a lifetime permit to submit an estimate of the resources needed to plug and abandon the well revised to reflect inflation of such costs, and a revised demonstration of financial responsibility, if necessary. The owner or operator of a well injecting hazardous waste must comply with the financial responsibility requirements of subpart F of this part. For Class VI wells, the permittee shall show evidence of such financial responsibility to the Director by the submission of a qualifying instrument (see §146.85(a) of this chapter), such as a financial statement or other materials acceptable to the Director. The owner or operator of a Class VI well must comply with the financial responsibility requirements set forth in §146.85 of this chapter.	40 CFR 144.52(a)(7)(ii)		
Mechanical integrity. A permit for any Class I, II, III or VI well or injection project which lacks mechanical integrity shall include, and for any Class V well may include, a condition prohibiting injection operations until the permittee shows to the satisfaction of the Director under §§146.8, or 146.89 for Class VI, that the well has mechanical integrity.	40 CFR 144.52(a)(8)		
Additional conditions. The Director shall impose on a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into underground sources of drinking water.	40 CFR 144.52(a)(9)		
In addition to conditions required in all permits the Director shall establish conditions in permits as required on a case-by-case basis, to provide for and assure compliance with all applicable requirements of the SDWA and parts 144, 145, 146 and 124.	40 CFR 144.52(b)(1)		
For a State issued permit, an applicable requirement is a State	40 CFR 144.52(b)(2)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
statutory or regulatory requirement which takes effect prior to final administrative disposition of the permit. For a permit issued by EPA, an applicable requirement is a statutory or regulatory requirement (including any interim final regulation) which takes effect prior to the issuance of the permit. Section 124.14 trespening of comment period) provides a mean-for respening EPA permit proceedings at the discretion of the Director where new requirements become effective during the permitting process and are of sufficient magnitude to make additional proceedings desirable. For State and EPA administered programs, an applicable requirement is also any requirement which takes effect prior to the modification or revocation and reissuance of a permit, to the extent allowed in §144.39.			
New or reissued permits, and to the extent allowed under §144.39 modified or revoked and reissued permits, shall incorporate each of the applicable requirements referenced in §144.52.	40 CFR 144.52(b)(3)		
Incorporation. All permit conditions shall be incorporated either expressly or by reference. If incorporated by reference, a specific citation to the applicable regulations or requirements must be given in the permit.	40 CFR 144.52(c)		
40 CFR 144.53 Schedule of compliance.			
General. The permit may, when appropriate, specify a schedule of compliance leading to compliance with the SDWA and parts 144, 145, 146, and 124.	40 CFR 144.53(a)		
Time for compliance. Any schedules of compliance shall require compliance as soon as possible, and in no case later than 3 years after the effective date of the permit.	40 CFR 144.53(a)(1)		
Interim dates. Except as provided in paragraph (b)(1)(ii) of this section, if a permit establishes a schedule of compliance which exceeds 1 year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.	40 CFR 144.53(a)(2)		
The time between interim dates shall not exceed 1 year.	40 CFR 144.53(a)(2)(i)		
If the time necessary for completion of any interim requirement is more than 1 year and is not readily divisible into stages for completion, the permit shall specify interim dates for the	40 CFR 144.53(a)(2)(ii)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.			
Reporting. The permit shall be written to require that if paragraph (a)(1) of this section is applicable, progress reports be submitted no later than 30 days following each interim date and the final date of compliance.	40 CFR 144.53(a)(3)		
Alternative schedules of compliance. A permit applicant or permittee may cease conducting regulated activities (by plugging and abandonment) rather than continue to operate and meet permit requirements as follows:	40 CFR 144.53(b)		
If the permittee decides to cease conducting regulated activities at a given time within the term of a permit which has already been issued:	40 CFR 144.53(b)(1)		
The permit may be modified to contain a new or additional schedule leading to timely cessation of activities; or	40 CFR 144.53(b)(1)(i)		
The permittee shall cease conducting permitted activities before noncompliance with any interim or final compliance schedule requirement already specified in the permit.	40 CFR 144.53(b)(1)(ii)		
If the decision to cease conducting regulated activities is made before issuance of a permit whose term will include the termination date, the permit shall contain a schedule leading to termination which will ensure timely compliance with applicable requirements.	40 CFR 144.53(b)(2)		
If the permittee is undecided whether to cease conducting regulated activities, the Director may issue or modify a permit to contain two schedules as follows:	40 CFR 144.53(b)(3)		
Both schedules shall contain an identical interim deadline requiring a final decision on whether to cease conducting regulated activities no later than a date which ensures sufficient time to comply with applicable requirements in a timely manner if the decision is to continue conducting regulated activities;	40 CFR 144.53(b)(3)(i)		
One schedule shall lead to timely compliance with applicable requirements;	40 CFR 144.53(b)(3)(ii)		
The second schedule shall lead to cessation of regulated activities by a date which will ensure timely compliance with applicable	40 CFR 144.53(b)(3)(iii)		

Crosswalk for New States Applying for UIC Class VI Primacy Only

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
requirements;			
Each permit containing two schedules shall include a requirement that after the permittee has made a final decision under paragraph (b)(3)(i) of this section it shall follow the schedule leading to compliance if the decision is to continue conducting regulated activities, and follow the schedule leading to termination if the decision is to cease conducting regulated activities.	40 CFR 144.53(b)(3)(iv)		
The applicant's or permittee's decision to cease conducting regulated activities shall be evidenced by a firm public commitment satisfactory to the Director, such as a resolution of the board of directors of a corporation.	40 CFR 144.53(b)(4)		
40 CFR 144.54 Requirements for recording and reporting of mo	nitoring results.		
All permits shall specify: Requirements concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods (including biological monitoring methods when appropriate);	40 CFR 144.54(a)		
Required monitoring including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including when appropriate, continuous monitoring;	40 CFR 144.54(b)		
Applicable reporting requirements based upon the impact of the regulated activity and as specified in part 146. Reporting shall be no less frequent than specified in the above regulations.	40 CFR 144.54(c)		

Commented [N37]: Did not include 144.55 (corrective action) because it applies only to Class 1-III. Class VI applicants need to comply with 146.84 instead.

Also, Subpart G is not included as it applies only to Class V wells.

Crosswalk for New States Applying for UIC Class VI Primacy Only

		State Citation and Regulatory Text		
Federal Requirement	Federal Citation	(document title, page number, section/paragraph)	Different From Federal Requirement?	?
PART 146UNDERGR	OUND INJECTION CONT	TROL PROGRAM: CRITERIA AND	STANDARDS	
SUBPART AGENERAL PROVISIONS				
40 CFR 146.1 Applicability and scope.				
Upon the approval, partial approval or promulgation of a State UIC program by the Administrator, any underground injection which is not authorized by the Director by rule or by permit is unlawful.	40 CFR 146.1(b)			Commented [N38]: 146.1(a) does not contain any requirement and is not included.
40 CFR 146.2 Law authorizing these regulations.				Commented [CS39]: OGC: Can this provision be deleted?
The Safe Drinking Water Act, 42 U.S.C. 300f et seq. authorizes these regulations and all other UIC program regulations referenced in 40 CFR part 144. Certain regulations relating to the injection of hazardous waste are also authorized by the Resource Conservation and Recovery Act, 42 U.S.C. 6901 et seq.	40 CFR 146.2			
40 CFR 146.3 Definitions				Commented [N40]: OGC: This list contains all definitions in
Abandoned well		'		146.3 that are not already listed in 144 but includes the actual language only for those that are probably applicable to Class VI.
Casing means a pipe or tubing of appropriate material, of varying diameter and weight, lowered into a borehole during or after drilling in order to support the sides of the hole and thus prevent the walls from caving, to prevent loss of drilling mud into porous ground, or to prevent water, gas, or other fluid from entering or leaving the hole.				Note that there were no changes to 146.3 resulting from the GS ru
Catastrophic collapse				
Cementing means the operation whereby a cement slurry is pumped into a drilled hole and/or forced behind the casing.				
Confining bed Confining zone Contaminant Conventional mine Director Disposal well				Commented [N41]: This definition is not included because there is a different definition in 146.81.
Effective date of a UIC program means the date that a State UIC program is approved or established by the Administrator.				
Experimental technology		'		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
Fault means a surface or zone of rock fracture along which there has been displacement.			
Flow rate means the volume per time unit given to the flow of gases or other fluid substance which emerges from an orifice, pump, turbine or passes along a conduit or channel.			
Lithology means the description of rocks on the basis of their physical and chemical characteristics.			
Owner or operator means the owner or operator of any facility or activity subject to regulation under the RCRA, UIC, NPDES, or 404 programs.			
Packer means a device lowered into a well to produce a fluid-tight seal.			
Permit means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of this part and parts 124, 144, and 145. Permit does not include RCRA interim status (§122.23), UIC authorization by rule (§§144.21 to 144.26 and 144.15), or any permit which has not yet been the subject of final agency action, such as a "draft permit" or a "proposed permit."			
Plugging means the act or process of stopping the flow of water, oil or gas into or out of a formation through a borehole or well penetrating that formation.			
Plugging record means a systematic listing of permanent or temporary abandonment of water, oil, gas, test, exploration and waste injection wells, and may contain a well log, description of amounts and types of plugging material used, the method employed for plugging, a description of formations which are sealed and a graphic log of the well showing formation location, formation thickness, and location of plugging structures.			
Pressure means the total load or force per unit area acting on a surface.			
Sole or principal source aquifer means an aquifer which has been designated by the Administrator pursuant to section 1424 (a) or (e) of the SDWA.			

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
Subsidence Subsurface fluid distribution Subsurface fluid distribution system			
Surface casing means the first string of well casing to be installed in the well.			
Well plug means a watertight and gastight seal installed in a borehole or well to prevent movement of fluids.			
Well stimulation means several processes used to clean the well bore, enlarge channels, and increase pore space in the interval to be injected thus making it possible for wastewater to move more readily into the formation, and includes (1) surging, (2) jetting, (3) blasting, (4) acidizing, (5) hydraulic fracturing.			
Well monitoring			
40 CFR 146.4 Criteria for exempted aquifers.			
An aquifer or a portion thereof which meets the criteria for an "underground source of drinking water" in §146.3 may be determined under §144.7 of this chapter to be an "exempted aquifer" for Class I–V wells if it meets the criteria in paragraphs (a) through (c) of this section. Class VI wells must meet the criteria under paragraph (d) of this section:	40 CFR 146.4		
It does not currently serve as a source of drinking water; and	40 CFR 146.4(a)		
It cannot now and will not in the future serve as a source of drinking water because:	40 CFR 146.4(b)		
It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.	40 CFR 146.4(b)(1)		
It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;	40 CFR 146.4(b)(2)		
It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or	40 CFR 146.4(b)(3)		

Crosswalk for New States Applying for UIC Class VI Primacy Only

F. L. al Don't and	F. L. J.C'. A	State Citation and Regulatory Text (document title, page	Different From Federal Requirement?	
Federal Requirement It is located over a Class III well mining area subject to subsidence or catastrophic collapse; or	Federal Citation 40 CFR 146.4(b)(4)	number, section/paragraph)		
The total dissolved solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.	40 CFR 146.4(c)			
The areal extent of an aquifer exemption for a Class II enhanced oil recovery or enhanced gas recovery well may be expanded for the exclusive purpose of Class VI injection for geologic sequestration under §144.7(d) of this chapter if it meets the following criteria:	40 CFR 146.4(d)			
It does not currently serve as a source of drinking water; and	40 CFR 146.4(d)(1)			
The total dissolved solids content of the ground water is more than 3,000 mg/l and less than 10,000 mg/l; and	40 CFR 146.4(d)(2)			
It is not reasonably expected to supply a public water system.	40 CFR 146.4(d)(3)			Commented [N42]: Did not include 146.5—classification
SUBPART HCRITERIA AND STANDARDS APPLICABLE	TO CLASS VI WELLS			wells because the same language is already in 144.
40 CFR 146.81 Applicability.				Also, did not include 146.6 (AoR), 146.7 (Corrective action),
This subpart establishes criteria and standards for underground injection control programs to regulate any Class VI carbon dioxide geologic sequestration injection wells.	40 CFR 146.81(a)			146.8 (MIT), because they are addressed in subpart H.
This subpart applies to any wells used to inject carbon dioxide specifically for the purpose of geologic sequestration, i.e., the long-term containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations.	40 CFR 146.81(b)			
This subpart also applies to owners or operators of permit- or rule-authorized Class I, Class II, or Class V experimental carbon dioxide injection projects who seek to apply for a Class VI geologic sequestration permit for their well or wells. Owners or operators seeking to convert existing Class I, Class II, or Class V experimental wells to Class VI geologic sequestration wells must demonstrate to the Director that the wells were engineered and constructed to meet the requirements at §146.86(a) and ensure protection of USDWs, in lieu of requirements at §\$146.86(b) and 146.87(a). By [INSERT DATE 365 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER], owners or operators of either Class I wells previously permitted for the	40 CFR 146.81(c)			

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
purpose of geologic sequestration or Class V experimental technology wells no longer being used for experimental purposes that will continue injection of carbon dioxide for the purpose of GS must apply for a Class VI permit. A converted well must still meet all other requirements under part 146.			
Definitions. The following definitions apply to this subpart. To the extent that these definitions conflict with those in §§144.3 or 146.3 of this chapter these definitions govern for Class VI wells: area of review, carbon dioxide plume, carbon dioxide stream, confining zone, corrective action, geologic sequestration, geologic sequestration project, injection zone, post-injection site care, pressure front, site closure, transmissive fault or fracture.	40 CFR 146.81(d)		
40 CFR 146.82 Required Class VI permit information.			
This section sets forth the information which must be considered by the Director in authorizing Class VI wells. For converted Class I, Class II, or Class V experimental wells, certain maps, cross-sections, tabulations of wells within the area of review and other data may be included in the application by reference provided they are current, readily available to the Director, and sufficiently identified to be retrieved. In cases where EPA issues the permit, all the information in this section must be submitted to the Regional Administrator.	40 CFR 146.82		
Prior to the issuance of a permit for the construction of a new Class VI well or the conversion of an existing Class I, Class II, or Class V well to a Class VI well, the owner or operator shall submit, pursuant to §146.91(e), and the Director shall consider the following:	40 CFR 146.82(a)		
Information required in §144.31 (e)(1) through (6) of this chapter;	40 CFR 146.82(a)(1)		
A map showing the injection well for which a permit is sought and the applicable area of review consistent with §146.84. Within the area of review, the map must show the number or name, and location of all injection wells, producing wells, abandoned wells, plugged wells or dry holes, deep stratigraphic boreholes, State- or EPA-approved subsurface cleanup sites, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells, other pertinent surface features including structures intended for	40 CFR 146.82(a)(2)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
human occupancy, State, Tribal, and Territory boundaries, and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map;			
Information on the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations, including:	40 CFR 146.82(a)(3)		
Maps and cross sections of the area of review;	40 CFR 146.82(a)(3)(i)		
The location, orientation, and properties of known or suspected faults and fractures that may transect the confining zone(s) in the area of review and a determination that they would not interfere with containment;	40 CFR 146.82(a)(3)(ii)		
Data on the depth, areal extent, thickness, mineralogy, porosity, permeability, and capillary pressure of the injection and confining zone(s); including geology/facies changes based on field data which may include geologic cores, outcrop data, seismic surveys, well logs, and names and lithologic descriptions;	40 CFR 146.82(a)(3)(iii)		
Geomechanical information on fractures, stress, ductility, rock strength, and in situ fluid pressures within the confining zone(s);	40 CFR 146.82(a)(3)(iv)		
Information on the seismic history including the presence and depth of seismic sources and a determination that the seismicity would not interfere with containment; and	40 CFR 146.82(a)(3)(v)		
Geologic and topographic maps and cross sections illustrating regional geology, hydrogeology, and the geologic structure of the local area.	40 CFR 146.82(a)(3)(vi)		
A tabulation of all wells within the area of review which penetrate the injection or confining zone(s). Such data must include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require;	40 CFR 146.82(a)(4)		
Maps and stratigraphic cross sections indicating the general vertical and lateral limits of all USDWs, water wells and springs within the area of review, their positions relative to the injection zone(s), and the direction of water movement, where known;	40 CFR 146.82(a)(5)		
Baseline geochemical data on subsurface formations, including all	40 CFR 146.82(a)(6)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
USDWs in the area of review;			
Proposed operating data for the proposed geologic sequestration site:	40 CFR 146.82(a)(7)		
Average and maximum daily rate and volume and/or mass and total anticipated volume and/or mass of the carbon dioxide stream;	40 CFR 146.82(a)(7)(i)		
Average and maximum injection pressure;	40 CFR 146.82(a)(7)(ii)		
The source(s) of the carbon dioxide stream; and	40 CFR 146.82(a)(7)(iii)		
An analysis of the chemical and physical characteristics of the carbon dioxide stream.	40 CFR 146.82(a)(7)(iv)		
Proposed pre-operational formation testing program to obtain an analysis of the chemical and physical characteristics of the injection zone(s) and confining zone(s) and that meets the requirements at \$146.87;	40 CFR 146.82(a)(8)		
Proposed stimulation program, a description of stimulation fluids to be used and a determination that stimulation will not interfere with containment;	40 CFR 146.82(a)(9)		
Proposed procedure to outline steps necessary to conduct injection operation;	40 CFR 146.82(a)(10)		
Schematics or other appropriate drawings of the surface and subsurface construction details of the well;	40 CFR 146.82(a)(11)		
Injection well construction procedures that meet the requirements of §146.86;	40 CFR 146.82(a)(12)		
Proposed area of review and corrective action plan that meets the requirements under §146.84;	40 CFR 146.82(a)(13)		
A demonstration, satisfactory to the Director, that the applicant has met the financial responsibility requirements under §146.85;	40 CFR 146.82(a)(14)		
Proposed testing and monitoring plan required by §146.90;	40 CFR 146.82(a)(15)		
Proposed injection well plugging plan required by §146.92(b);	40 CFR 146.82(a)(16)		
Proposed post-injection site care and site closure plan required by §146.93(a);	40 CFR 146.82(a)(17)		
At the Director's discretion, a demonstration of an alternative post-	40 CFR 146.82(a)(18)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
injection site care timeframe required by §146.93(c);			
Proposed emergency and remedial response plan required by \$146.94(a);	40 CFR 146.82(a)(19)		
A list of contacts, submitted to the Director, for those States, Tribes, and Territories identified to be within the area of review of the Class VI project based on information provided in paragraph (a)(2) of this section; and	40 CFR 146.82(a)(20)		
Any other information requested by the Director.	40 CFR 146.82(a)(21)		
The Director shall notify, in writing, any States, Tribes, or Territories within the area of review of the Class VI project based on information provided in paragraphs (a)(2) and (a)(20) of this section of the permit application and pursuant to the requirements at §145.23(f)(13) of this chapter.	40 CFR 146.82(b)		
Prior to granting approval for the operation of a Class VI well, the Director shall consider the following information:	40 CFR 146.82(c)		
The final area of review based on modeling, using data obtained during logging and testing of the well and the formation as required by paragraphs $(c)(2)$, (3) , (4) , (6) , (7) , and (10) of this section;	40 CFR 146.82(c)(1)		
Any relevant updates, based on data obtained during logging and testing of the well and the formation as required by paragraphs (c)(3), (4), (6), (7), and (10) of this section, to the information on the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations, submitted to satisfy the requirements of paragraph (a)(3) of this section;	40 CFR 146.82(c)(2)		
Information on the compatibility of the carbon dioxide stream with fluids in the injection zone(s) and minerals in both the injection and the confining zone(s), based on the results of the formation testing program, and with the materials used to construct the well;	40 CFR 146.82(c)(3)		
The results of the formation testing program required at paragraph (a)(8) of this section;	40 CFR 146.82(c)(4)		
Final injection well construction procedures that meet the requirements of §146.86;	40 CFR 146.82(c)(5)		
The status of corrective action on wells in the area of review;	40 CFR 146.82(c)(6)		

Federal Requirement All available logging and testing program data on the well required	Federal Citation 40 CFR 146.82(c)(7)	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
by §146.87;	. , , ,		
A demonstration of mechanical integrity pursuant to §146.89;	40 CFR 146.82(c)(8)		
Any updates to the proposed area of review and corrective action plan, testing and monitoring plan, injection well plugging plan, post-injection site care and site closure plan, or the emergency and remedial response plan submitted under paragraph (a) of this section, which are necessary to address new information collected during logging and testing of the well and the formation as required by all paragraphs of this section, and any updates to the alternative post-injection site care timeframe demonstration submitted under paragraph (a) of this section, which are necessary to address new information collected during the logging and testing of the well and the formation as required by all paragraphs of this section; and	40 CFR 146.82(c)(9)		
Any other information requested by the Director.	40 CFR 146.82(c)(10)		
Owners or operators seeking a waiver of the requirement to inject below the lowermost USDW must also refer to §146.95 and submit a supplemental report, as required at §146.95(a). The supplemental report is not part of the permit application.	40 CFR 146.82(d)		
40 CFR 146.83 Minimum criteria for siting.			
Owners or operators of Class VI wells must demonstrate to the satisfaction of the Director that the wells will be sited in areas with a suitable geologic system. The owners or operators must demonstrate that the geologic system comprises:	40 CFR 146.83(a)		
An injection zone(s) of sufficient areal extent, thickness, porosity, and permeability to receive the total anticipated volume of the carbon dioxide stream;	40 CFR 146.83(a)(1)		
Confining zone(s) free of transmissive faults or fractures and of sufficient areal extent and integrity to contain the injected carbon dioxide stream and displaced formation fluids and allow injection at proposed maximum pressures and volumes without initiating or propagating fractures in the confining zone(s).	40 CFR 146.83(a)(2)		
The Director may require owners or operators of Class VI wells to identify and characterize additional zones that will impede vertical fluid movement, are free of faults and fractures that may interfere	40 CFR 146.83(b)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
with containment, allow for pressure dissipation, and provide additional opportunities for monitoring, mitigation, and remediation.			
40 CFR 146.84 Area of review and corrective action.			
The area of review is the region surrounding the geologic sequestration project where USDWs may be endangered by the injection activity. The area of review is delineated using computational modeling that accounts for the physical and chemical properties of all phases of the injected carbon dioxide stream and is based on available site characterization, monitoring, and operational data.	40 CFR 146.84(a)		
The owner or operator of a Class VI well must prepare, maintain, and comply with a plan to delineate the area of review for a proposed geologic sequestration project, periodically reevaluate the delineation, and perform corrective action that meets the requirements of this section and is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. As a part of the permit application for approval by the Director, the owner or operator must submit an area of review and corrective action plan that includes the following information:	40 CFR 146.84(b)		
The method for delineating the area of review that meets the requirements of paragraph (c) of this section, including the model to be used, assumptions that will be made, and the site characterization data on which the model will be based;	40 CFR 146.84(b)(1)		
A description of:	40 CFR 146.84(b)(2)		
The minimum fixed frequency, not to exceed five years, at which the owner or operator proposes to reevaluate the area of review;	40 CFR 146.84(b)(2)(i)		
The monitoring and operational conditions that would warrant a reevaluation of the area of review prior to the next scheduled reevaluation as determined by the minimum fixed frequency established in paragraph (b)(2)(i) of this section.	40 CFR 146.84(b)(2)(ii)		
How monitoring and operational data (e.g., injection rate and pressure) will be used to inform an area of review reevaluation; and	40 CFR 146.84(b)(2)(iii)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
How corrective action will be conducted to meet the requirements of paragraph (d) of this section, including what corrective action will be performed prior to injection and what, if any, portions of the area of review will have corrective action addressed on a phased basis and how the phasing will be determined; how corrective action will be adjusted if there are changes in the area of review; and how site access will be guaranteed for future corrective action.	40 CFR 146.84(b)(2)(iv)		
Owners or operators of Class VI wells must perform the following actions to delineate the area of review and identify all wells that require corrective action:	40 CFR 146.84(c)		
Predict, using existing site characterization, monitoring and operational data, and computational modeling, the projected lateral and vertical migration of the carbon dioxide plume and formation fluids in the subsurface from the commencement of injection activities until the plume movement ceases, until pressure differentials sufficient to cause the movement of injected fluids or formation fluids into a USDW are no longer present, or until the end of a fixed time period as determined by the Director. The model must:	40 CFR 146.84(c)(1)		
Be based on detailed geologic data collected to characterize the injection zone(s), confining zone(s) and any additional zones; and anticipated operating data, including injection pressures, rates, and total volumes over the proposed life of the geologic sequestration project;	40 CFR 146.84(c)(1)(i)		
Take into account any geologic heterogeneities, other discontinuities, data quality, and their possible impact on model predictions; and	40 CFR 146.84(c)(1)(ii)		
Consider potential migration through faults, fractures, and artificial penetrations.	40 CFR 146.84(c)(1)(iii)		
Using methods approved by the Director, identify all penetrations, including active and abandoned wells and underground mines, in the area of review that may penetrate the confining zone(s). Provide a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require; and	40 CFR 146.84(c)(2)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
Determine which abandoned wells in the area of review have been plugged in a manner that prevents the movement of carbon dioxide or other fluids that may endanger USDWs, including use of materials compatible with the carbon dioxide stream.	40 CFR 146.84(c)(3)		
Owners or operators of Class VI wells must perform corrective action on all wells in the area of review that are determined to need corrective action, using methods designed to prevent the movement of fluid into or between USDWs, including use of materials compatible with the carbon dioxide stream, where appropriate.	40 CFR 146.84(d)		
At the minimum fixed frequency, not to exceed five years, as specified in the area of review and corrective action plan, or when monitoring and operational conditions warrant, owners or operators must:	40 CFR 146.84(e)		
Reevaluate the area of review in the same manner specified in paragraph (c)(1) of this section;	40 CFR 146.84(e)(1)		
Identify all wells in the reevaluated area of review that require corrective action in the same manner specified in paragraph (c) of this section;	40 CFR 146.84(e)(2)		
Perform corrective action on wells requiring corrective action in the reevaluated area of review in the same manner specified in paragraph (d) of this section; and	40 CFR 146.84(e)(3)		
Submit an amended area of review and corrective action plan or demonstrate to the Director through monitoring data and modeling results that no amendment to the area of review and corrective action plan is needed. Any amendments to the area of review and corrective action plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at §§144.39 or 144.41 of this chapter, as appropriate.	40 CFR 146.84(e)(4)		
The emergency and remedial response plan (as required by \$146.94) and the demonstration of financial responsibility (as described by \$146.85) must account for the area of review delineated as specified in paragraph (c)(1) of this section or the most recently evaluated area of review delineated under paragraph (e) of this section, regardless of whether or not corrective action in the area of review is phased.	40 CFR 146.84(f)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
All modeling inputs and data used to support area of review reevaluations under paragraph (e) of this section shall be retained for 10 years.	40 CFR 146.84(g)		
40 CFR 146.85 Financial responsibility.			
The owner or operator must demonstrate and maintain financial responsibility as determined by the Director that meets the following conditions:	40 CFR 146.85(a)		
The financial responsibility instrument(s) used must be from the following list of qualifying instruments:	40 CFR 146.85(a)(1)		
Trust Funds	40 CFR 146.85(a)(1)(i)		
Surety Bonds	40 CFR 146.85(a)(1)(ii)		
Letter of Credit	40 CFR 146.85(a)(1)(iii)		
Insurance	40 CFR 146.85(a)(1)(iv)		
Self Insurance (i.e., Financial Test and Corporate Guarantee)	40 CFR 146.85(a)(1)(v)		
Escrow Account	40 CFR 146.85(a)(1)(vi)		
Any other instrument(s) satisfactory to the Director	40 CFR 146.85(a)(1)(vii)		
The qualifying instrument(s) must be sufficient to cover the cost of:	40 CFR 146.85(a)(2)		
Corrective action (that meets the requirements of §146.84);	40 CFR 146.85(a)(2)(i)		
Injection well plugging (that meets the requirements of §146.92);	40 CFR 146.85(a)(2)(ii)		
Post injection site care and site closure (that meets the requirements of §146.93); and	40 CFR 146.85(a)(2)(iii)		
Emergency and remedial response (that meets the requirements of $\S146.94$).	40 CFR 146.85(a)(2)(iv)		
The financial responsibility instrument(s) must be sufficient to address endangerment of underground sources of drinking water.	40 CFR 146.85(a)(3)		
The qualifying financial responsibility instrument(s) must comprise protective conditions of coverage.	40 CFR 146.85(a)(4)		
Protective conditions of coverage must include at a minimum cancellation, renewal, and continuation provisions, specifications	40 CFR 146.85(a)(4)(i)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
on when the provider becomes liable following a notice of cancellation if there is a failure to renew with a new qualifying financial instrument, and requirements for the provider to meet a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.			
Cancellation – for purposes of this part, an owner or operator must provide that their financial mechanism may not cancel, terminate or fail to renew except for failure to pay such financial instrument. If there is a failure to pay the financial instrument, the financial institution may elect to cancel, terminate, or fail to renew the instrument by sending notice by certified mail to the owner or operator and the Director. The cancellation must not be final for 120 days after receipt of cancellation notice. The owner or operator must provide an alternate financial responsibility demonstration within 60 days of notice of cancellation, and if an alternate financial responsibility demonstration is not acceptable (or possible), any funds from the instrument being cancelled must be released within 60 days of notification by the Director.	40 CFR 146.85(a)(4)(i)(A)		
Renewal – for purposes of this part, owners or operators must renew all financial instruments, if an instrument expires, for the entire term of the geologic sequestration project. The instrument may be automatically renewed as long as the owner or operator has the option of renewal at the face amount of the expiring instrument. The automatic renewal of the instrument must, at a minimum, provide the holder with the option of renewal at the face amount of the expiring financial instrument.	40 CFR 146.85(a)(4)(i)(B)		
Cancellation, termination, or failure to renew may not occur and the financial instrument will remain in full force and effect in the event that on or before the date of expiration: the Director deems the facility abandoned; or the permit is terminated or revoked or a new permit is denied; or closure is ordered by the Director or a U.S. district court or other court of competent jurisdiction; or the owner or operator is named as debtor in a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code; or the amount due is paid.	40 CFR 146.85(a)(4)(i)(C)		
The qualifying financial responsibility instrument(s) must be approved by the Director.	40 CFR 146.85(a)(5)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
The Director shall consider and approve the financial responsibility demonstration for all the phases of the geologic sequestration project prior to issue a Class VI permit (§146.82).	40 CFR 146.85(a)(5)(i)		
The owner or operator must provide any updated information related to their financial responsibility instrument(s) on an annual basis and if there are any changes, the Director must evaluate, within a reasonable time, the financial responsibility demonstration to confirm that the instrument(s) used remain adequate for use. The owner or operator must maintain financial responsibility requirements regardless of the status of the Director's review of the financial responsibility demonstration.	40 CFR 146.85(a)(5)(ii)		
The Director may disapprove the use of a financial instrument if he determines that it is not sufficient to meet the requirements of this section.	40 CFR 146.85(a)(5)(iii)		
The owner or operator may demonstrate financial responsibility by using one or multiple qualifying financial instruments for specific phases of the geologic sequestration project.	40 CFR 146.85(a)(6)		
In the event that the owner or operator combines more than one instrument for a specific geologic sequestration phase (e.g., well plugging), such combination must be limited to instruments that are not based on financial strength or performance (i.e., self insurance or performance bond), for example trust funds, surety bonds guaranteeing payment into a trust fund, letters of credit, escrow account, and insurance. In this case, it is the combination of mechanisms, rather than the single mechanism, which must provide financial responsibility for an amount at least equal to the current cost estimate.	40 CFR 146.85(a)(6)(i)		
When using a third-party instrument to demonstrate financial responsibility, the owner or operator must provide a proof that the third-party providers either have passed financial strength requirements based on credit ratings; or has met a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.	40 CFR 146.85(a)(6)(ii)		
An owner or operator using certain types of third party instruments must establish a standby trust to enable EPA to be party to the financial responsibility agreement without EPA being the	40 CFR 146.85(a)(6)(iii)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
beneficiary of any funds. The standby trust fund must be used along with other financial responsibility instruments (e.g., surety bonds, letters of credit, or escrow accounts) to provide a location to place funds if needed.			
An owner or operator may deposit money to an escrow account to cover financial responsibility requirements; this account must segregate funds sufficient to cover estimated costs for Class VI (geologic sequestration) financial responsibility from other accounts and uses.	40 CFR 146.85(a)(6)(iv)		
An owner or operator or its guarantor may use self insurance to demonstrate financial responsibility for geologic sequestration projects. In order to satisfy this requirement the owner or operator must meet a Tangible Net Worth of an amount approved by the Director, have a Net working capital and tangible net worth each at least six times the sum of the current well plugging, post injection site care and site closure cost, have assets located in the United States amounting to at least 90 percent of total assets or at least six times the sum of the current well plugging, post injection site care and site closure cost, and must submit a report of its bond rating and financial information annually. In addition the owner or operator must either: have a bond rating test of AAA, AA, A, or BBB as issued by Standard & Poor's or Aaa, Aa, A, or Baa as issued by Moody's; or meet all of the following five financial ratio thresholds: a ratio of total liabilities to net worth less than 2.0; a ratio of current assets to current liabilities greater than 1.5; a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than 0.1; a ratio of current assets minus current liabilities greater than 0.1; a ratio of current assets minus current liabilities greater than 0.1; and a net profit (revenues minus expenses) greater than 0.	40 CFR 146.85(a)(6)(v)		
An owner or operator who is not able to meet corporate financial test criteria may arrange a corporate guarantee by demonstrating that its corporate parent meets the financial test requirements on its behalf. The parent's demonstration that it meets the financial test requirement is insufficient if it has not also guaranteed to fulfill the obligations for the owner or operator.	40 CFR 146.85(a)(6)(vi)		
An owner or operator may obtain an insurance policy to cover the estimated costs of geologic sequestration activities requiring	40 CFR 146.85(a)(6)(vii)		

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financial responsibility. This insurance policy must be obtained from a third party provider.			
The requirement to maintain adequate financial responsibility and resources is directly enforceable regardless of whether the requirement is a condition of the permit.	40 CFR 146.85(b)		
The owner or operator must maintain financial responsibility and resources until:	40 CFR 146.85(b)(1)		
The Director receives and approves the completed post-injection site care and site closure plan; and	40 CFR 146.85(b)(1)(i)		
The Director approves site closure.	40 CFR 146.85(b)(1)(ii)		
The owner or operator may be released from a financial instrument in the following circumstances:	40 CFR 146.85(b)(2)		
The owner or operator has completed the phase of the geologic sequestration project for which the financial instrument was required and has fulfilled all its financial obligations as determined by the Director, including obtaining financial responsibility for the next phase of the GS project, if required; or	40 CFR 146.85(b)(2)(i)		
The owner or operator has submitted a replacement financial instrument and received written approval from the Director accepting the new financial instrument and releasing the owner or operator from the previous financial instrument.	40 CFR 146.85(b)(2)(ii)		
The owner or operator must have a detailed written estimate, in current dollars, of the cost of performing corrective action on wells in the area of review, plugging the injection well(s), post-injection site care and site closure, and emergency and remedial response.	40 CFR 146.85(c)		
The cost estimate must be performed for each phase separately and must be based on the costs to the regulatory agency of hiring a third party to perform the required activities. A third party is a party who is not within the corporate structure of the owner or operator.	40 CFR 146.85(c)(1)		
During the active life of the geologic sequestration project, the owner or operator must adjust the cost estimate for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s) used to comply with paragraph (a) of this	40 CFR 146.85(c)(2)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
section and provide this adjustment to the Director. The owner or operator must also provide to the Director written updates of adjustments to the cost estimate within 60 days of any amendments to the area of review and corrective action plan (§146.84), the injection well plugging plan (§146.92), the post-injection site care and site closure plan (§146.93), and the emergency and remedial response plan (§146.94).			
The Director must approve any decrease or increase to the initial cost estimate. During the active life of the geologic sequestration project, the owner or operator must revise the cost estimate no later than 60 days after the Director has approved the request to modify the area of review and corrective action plan (§146.84), the injection well plugging plan (§146.92), the post-injection site care and site closure plan (§146.93), and the emergency and response plan (§146.94), if the change in the plan increases the cost. If the change to the plans decreases the cost, any withdrawal of funds must be approved by the Director. Any decrease to the value of the financial assurance instrument must first be approved by the Director. The revised cost estimate must be adjusted for inflation as specified at paragraph (c)(2) of this section.	40 CFR 146.85(c)(3)		
Whenever the current cost estimate increases to an amount greater than the face amount of a financial instrument currently in use, the owner or operator, within 60 days after the increase, must either cause the face amount to be increased to an amount at least equal to the current cost estimate and submit evidence of such increase to the Director, or obtain other financial responsibility instruments to cover the increase. Whenever the current cost estimate decreases, the face amount of the financial assurance instrument may be reduced to the amount of the current cost estimate only after the owner or operator has received written approval from the Director.	40 CFR 146.85(c)(4)		
The owner or operator must notify the Director by certified mail of adverse financial conditions such as bankruptcy that may affect the ability to carry out injection well plugging and post-injection site care and site closure.	40 CFR 146.85(d)		
In the event that the owner or operator or the third party provider of a financial responsibility instrument is going through a bankruptcy, the owner or operator must notify the Director by certified mail of	40 CFR 146.85(d)(1)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor, within 10 days after commencement of the proceeding.			
A guarantor of a corporate guarantee must make such a notification to the Director if he/she is named as debtor, as required under the terms of the corporate guarantee.	40 CFR 146.85(d)(2)		
An owner or operator who fulfills the requirements of paragraph (a) of this section by obtaining a trust fund, surety bond, letter of credit, escrow account, or insurance policy will be deemed to be without the required financial assurance in the event of bankruptcy of the trustee or issuing institution, or a suspension or revocation of the authority of the trustee institution to act as trustee of the institution issuing the trust fund, surety bond, letter of credit, escrow account, or insurance policy. The owner or operator must establish other financial assurance within 60 days after such an event.	40 CFR 146.85(d)(3)		
The owner or operator must provide an adjustment of the cost estimate to the Director within 60 days of notification by the Director, if the Director determines during the annual evaluation of the qualifying financial responsibility instrument(s) that the most recent demonstration is no longer adequate to cover the cost of corrective action (as required by §146.84), injection well plugging (as required by §146.92), post-injection site care and site closure (as required by §146.93), and emergency and remedial response (as required by §146.94).	40 CFR 146.85(e)		
The Director must approve the use and length of pay-in-periods for trust funds or escrow accounts.	40 CFR 146.85(f)		
40 CFR 146.86 Injection well construction requirements.			
<i>General.</i> The owner or operator must ensure that all Class VI wells are constructed and completed to:	40 CFR 146.86(a)		
Prevent the movement of fluids into or between USDWs or into any unauthorized zones;	40 CFR 146.86(a)(1)		
Permit the use of appropriate testing devices and workover tools; and	40 CFR 146.86(a)(2)		
Permit continuous monitoring of the annulus space between the	40 CFR 146.86(a)(3)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
injection tubing and long string casing.			
Casing and Cementing of Class VI Wells.	40 CFR 146.86(b)		
Casing and cement or other materials used in the construction of each Class VI well must have sufficient structural strength and be designed for the life of the geologic sequestration project. All well materials must be compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director. The casing and cementing program must be designed to prevent the movement of fluids into or between USDWs. In order to allow the Director to determine and specify casing and cementing requirements, the owner or operator must provide the following information:	40 CFR 146.86(b)(1)		
Depth to the injection zone(s);	40 CFR 146.86(b)(1)(i)		
Injection pressure, external pressure, internal pressure, and axial loading;	40 CFR 146.86(b)(1)(ii)		
Hole size;	40 CFR 146.86(b)(1)(iii)		
Size and grade of all casing strings (wall thickness, external diameter, nominal weight, length, joint specification, and construction material);	40 CFR 146.86(b)(1)(iv)		
Corrosiveness of the carbon dioxide stream and formation fluids;	40 CFR 146.86(b)(1)(v)		
Down-hole temperatures;	40 CFR 146.86(b)(1)(vi)		
Lithology of injection and confining zone(s);	40 CFR 146.86(b)(1)(vii)		
Type or grade of cement and cement additives; and	40 CFR 146.86(b)(1)(viii)		
Quantity, chemical composition, and temperature of the carbon dioxide stream.	40 CFR 146.86(b)(1)(ix)		
Surface casing must extend through the base of the lowermost USDW and be cemented to the surface through the use of a single or multiple strings of casing and cement.	40 CFR 146.86(b)(2)		
At least one long string casing, using a sufficient number of centralizers, must extend to the injection zone and must be cemented by circulating cement to the surface in one or more	40 CFR 146.86(b)(3)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
stages.			
Circulation of cement may be accomplished by staging. The Director may approve an alternative method of cementing in cases where the cement cannot be recirculated to the surface, provided the owner or operator can demonstrate by using logs that the cement does not allow fluid movement behind the well bore.	40 CFR 146.86(b)(4)		
Cement and cement additives must be compatible with the carbon dioxide stream and formation fluids and of sufficient quality and quantity to maintain integrity over the design life of the geologic sequestration project. The integrity and location of the cement shall be verified using technology capable of evaluating cement quality radially and identifying the location of channels to ensure that USDWs are not endangered.	40 CFR 146.86(b)(5)		
Tubing and packer.	40 CFR 146.86(c)		
Tubing and packer materials used in the construction of each Class VI well must be compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director.	40 CFR 146.86(c)(1)		
All owners or operators of Class VI wells must inject fluids through tubing with a packer set at a depth opposite a cemented interval at the location approved by the Director.	40 CFR 146.86(c)(2)		
In order for the Director to determine and specify requirements for tubing and packer, the owner or operator must submit the following information:	40 CFR 146.86(c)(3)		
Depth of setting;	40 CFR 146.86(c)(3)(i)		
Characteristics of the carbon dioxide stream (chemical content, corrosiveness, temperature, and density) and formation fluids;	40 CFR 146.86(c)(3)(ii)		
Maximum proposed injection pressure;	40 CFR 146.86(c)(3)(iii)		
Maximum proposed annular pressure;	40 CFR 146.86(c)(3)(iv)		
Proposed injection rate (intermittent or continuous) and volume and/or mass of the carbon dioxide stream;	40 CFR 146.86(c)(3)(v)		

Federal Requirement	Federal Citation	State Citation and Regulatory Text (document title, page number, section/paragraph)	Different From Federal Requirement?
Size of tubing and casing; and	40 CFR 146.86(c)(3)(vi)		
Tubing tensile, burst, and collapse strengths.	40 CFR 146.86(c)(3)(vii)		
40 CFR 146.87 Logging, sampling, and testing prior to injection	well operation.		
During the drilling and construction of a Class VI injection well, the owner or operator must run appropriate logs, surveys and tests to determine or verify the depth, thickness, porosity, permeability, and lithology of, and the salinity of any formation fluids in all relevant geologic formations to ensure conformance with the injection well construction requirements under §146.86 and to establish accurate baseline data against which future measurements may be compared. The owner or operator must submit to the Director a descriptive report prepared by a knowledgeable log analyst that includes an interpretation of the results of such logs and tests. At a minimum, such logs and tests must include:	40 CFR 146.87(a)		
Deviation checks during drilling on all holes constructed by drilling a pilot hole which is enlarged by reaming or another method. Such checks must be at sufficiently frequent intervals to determine the location of the borehole and to ensure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling; and	40 CFR 146.87(a)(1)		
Before and upon installation of the surface casing:	40 CFR 146.87(a)(2)		
Resistivity, spontaneous potential, and caliper logs before the casing is installed; and	40 CFR 146.87(a)(2)(i)		
A cement bond and variable density log to evaluate cement quality radially, and a temperature log after the casing is set and cemented.	40 CFR 146.87(a)(2)(ii)		
Before and upon installation of the long string casing:	40 CFR 146.87(a)(3)		
Resistivity, spontaneous potential, porosity, caliper, gamma ray, fracture finder logs, and any other logs the Director requires for the given geology before the casing is installed; and	40 CFR 146.87(a)(3)(i)		
A cement bond and variable density log, and a temperature log after the casing is set and cemented.	40 CFR 146.87(a)(3)(ii)		
A series of tests designed to demonstrate the internal and external mechanical integrity of injection wells, which may include:	40 CFR 146.87(a)(4)		

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A pressure test with liquid or gas;	40 CFR 146.87(a)(4)(i)		
A tracer survey such as oxygen-activation logging;	40 CFR 146.87(a)(4)(ii)		
A temperature or noise log;	40 CFR 146.87(a)(4)(iii)		
A casing inspection log; and	40 CFR 146.87(a)(4)(iv)		
Any alternative methods that provide equivalent or better information and that are required by and/or approved of by the Director.	40 CFR 146.87(a)(5)		
The owner or operator must take whole cores or sidewall cores of the injection zone and confining system and formation fluid samples from the injection zone(s), and must submit to the Director a detailed report prepared by a log analyst that includes: well log analyses (including well logs), core analyses, and formation fluid sample information. The Director may accept information on cores from nearby wells if the owner or operator can demonstrate that core retrieval is not possible and that such cores are representative of conditions at the well. The Director may require the owner or operator to core other formations in the borehole.	40 CFR 146.87(b)		
The owner or operator must record the fluid temperature, pH, conductivity, reservoir pressure, and static fluid level of the injection zone(s).	40 CFR 146.87(c)		
At a minimum, the owner or operator must determine or calculate the following information concerning the injection and confining zone(s):	40 CFR 146.87(d)		
Fracture pressure;	40 CFR 146.87(d)(1)		
Other physical and chemical characteristics of the injection and confining zone(s); and	40 CFR 146.87(d)(2)		
Physical and chemical characteristics of the formation fluids in the injection zone(s).	40 CFR 146.87(d)(3)		
Upon completion, but prior to operation, the owner or operator must conduct the following tests to verify hydrogeologic characteristics of the injection zone(s):	40 CFR 146.87(e)		
A pressure fall-off test; and,	40 CFR 146.87(e)(1)		
A pump test; or	40 CFR 146.87(e)(2)		

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Injectivity tests.	40 CFR 146.87(e)(3)		
The owner or operator must provide the Director with the opportunity to witness all logging and testing by this subpart. The owner or operator must submit a schedule of such activities to the Director 30 days prior to conducting the first test and submit any changes to the schedule 30 days prior to the next scheduled test.	40 CFR 146.87(f)		
40 CFR 146.88 Injection well operating requirements.			
Except during stimulation, the owner or operator must ensure that injection pressure does not exceed 90 percent of the fracture pressure of the injection zone(s) so as to ensure that the injection does not initiate new fractures or propagate existing fractures in the injection zone(s). In no case may injection pressure initiate fractures in the confining zone(s) or cause the movement of injection or formation fluids that endangers a USDW. Pursuant to requirements at §146.82(a)(9), all stimulation programs must be approved by the Director as part of the permit application and incorporated into the permit.	40 CFR 146.88(a)		
Injection between the outermost casing protecting USDWs and the well bore is prohibited.	40 CFR 146.88(b)		
The owner or operator must fill the annulus between the tubing and the long string casing with a non-corrosive fluid approved by the Director. The owner or operator must maintain on the annulus a pressure that exceeds the operating injection pressure, unless the Director determines that such requirement might harm the integrity of the well or endanger USDWs.	40 CFR 146.88(c)		
Other than during periods of well workover (maintenance) approved by the Director in which the sealed tubing-casing annulus is disassembled for maintenance or corrective procedures, the owner or operator must maintain mechanical integrity of the injection well at all times.	40 CFR 146.88(d)		
The owner or operator must install and use:	40 CFR 146.88(e)		
Continuous recording devices to monitor: the injection pressure; the rate, volume and/or mass, and temperature of the carbon dioxide stream; and the pressure on the annulus between the tubing and the long string casing and annulus fluid volume; and	40 CFR 146.88(e)(1)		

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Alarms and automatic surface shut-off systems or, at the discretion of the Director, down-hole shut-off systems (e.g., automatic shut-off, check valves) for onshore wells or, other mechanical devices that provide equivalent protection; and	40 CFR 146.88(e)(2)		
Alarms and automatic down-hole shut-off systems for wells located offshore but within State territorial waters, designed to alert the operator and shut-in the well when operating parameters such as annulus pressure, injection rate, or other parameters diverge beyond permitted ranges and/or gradients specified in the permit.	40 CFR 146.88(e)(3)		
If a shutdown (i.e., down-hole or at the surface) is triggered or a loss of mechanical integrity is discovered, the owner or operator must immediately investigate and identify as expeditiously as possible the cause of the shutoff. If, upon such investigation, the well appears to be lacking mechanical integrity, or if monitoring required under paragraph (e) of this section otherwise indicates that the well may be lacking mechanical integrity, the owner or operator must:	40 CFR 146.88(f)		
Immediately cease injection;	40 CFR 146.88(f)(1)		
Take all steps reasonably necessary to determine whether there may have been a release of the injected carbon dioxide stream or formation fluids into any unauthorized zone;	40 CFR 146.88(f)(2)		
Notify the Director within 24 hours;	40 CFR 146.88(f)(3)		
Restore and demonstrate mechanical integrity to the satisfaction of the Director prior to resuming injection; and	40 CFR 146.88(f)(4)		
Notify the Director when injection can be expected to resume.	40 CFR 146.88(f)(5)		
40 CFR 146.89 Mechanical integrity.			
A Class VI well has mechanical integrity if:	40 CFR 146.89(a)		
There is no significant leak in the casing, tubing, or packer; and	40 CFR 146.89(a)(1)		
There is no significant fluid movement into a USDW through channels adjacent to the injection well bore.	40 CFR 146.89(a)(2)		
To evaluate the absence of significant leaks under paragraph (a)(1) of this section, owners or operators must, following an initial annulus pressure test, continuously monitor injection pressure, rate,	40 CFR 146.89(b)		

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injected volumes; pressure on the annulus between tubing and long-string casing; and annulus fluid volume as specified in \$146.88 (e);			
At least once per year, the owner or operator must use one of the following methods to determine the absence of significant fluid movement under paragraph (a)(2) of this section:	40 CFR 146.89(c)		
An approved tracer survey such as an oxygen-activation log; or	40 CFR 146.89(c)(1)		
A temperature or noise log.	40 CFR 146.89(c)(2)		
If required by the Director, at a frequency specified in the testing and monitoring plan required at §146.90, the owner or operator must run a casing inspection log to determine the presence or absence of corrosion in the long-string casing.	40 CFR 146.89(d)		
The Director may require any other test to evaluate mechanical integrity under paragraphs (a)(1) or (a)(2) of this section. Also, the Director may allow the use of a test to demonstrate mechanical integrity other than those listed above with the written approval of the Administrator. To obtain approval for a new mechanical integrity test, the Director must submit a written request to the Administrator setting forth the proposed test and all technical data supporting its use. The Administrator may approve the request if he or she determines that it will reliably demonstrate the mechanical integrity of wells for which its use is proposed. Any alternate method approved by the Administrator will be published in the Federal Register and may be used in all States in accordance with applicable State law unless its use is restricted at the time of approval by the Administrator.	40 CFR 146.89(e)		
In conducting and evaluating the tests enumerated in this section or others to be allowed by the Director, the owner or operator and the Director must apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Director, he/she shall include a description of the test(s) and the method(s) used. In making his/her evaluation, the Director must review monitoring and other test data submitted since the previous evaluation.	40 CFR 146.89(f)		
The Director may require additional or alternative tests if the results presented by the owner or operator under paragraphs (a)	40 CFR 146.89(g)		

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through (d) of this section are not satisfactory to the Director to demonstrate that there is no significant leak in the casing, tubing, or packer, or to demonstrate that there is no significant movement of fluid into a USDW resulting from the injection activity as stated in paragraphs (a)(1) and (2) of this section.			
40 CFR 146.90 Testing and monitoring requirements.			
The owner or operator of a Class VI well must prepare, maintain, and comply with a testing and monitoring plan to verify that the geologic sequestration project is operating as permitted and is not endangering USDWs. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The testing and monitoring plan must be submitted with the permit application, for Director approval, and must include a description of how the owner or operator will meet the requirements of this section, including accessing sites for all necessary monitoring and testing during the life of the project. Testing and monitoring associated with geologic sequestration projects must, at a minimum, include:	40 CFR 146.90		
Analysis of the carbon dioxide stream with sufficient frequency to yield data representative of its chemical and physical characteristics;	40 CFR 146.90(a)		
Installation and use, except during well workovers as defined in \$146.88(d), of continuous recording devices to monitor injection pressure, rate, and volume; the pressure on the annulus between the tubing and the long string casing; and the annulus fluid volume added;	40 CFR 146.90(b)		
Corrosion monitoring of the well materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion, which must be performed on a quarterly basis to ensure that the well components meet the minimum standards for material strength and performance set forth in §146.86(b), by:	40 CFR 146.90(c)		
Analyzing coupons of the well construction materials placed in contact with the carbon dioxide stream; or	40 CFR 146.90(c)(1)		
Routing the carbon dioxide stream through a loop constructed with the material used in the well and inspecting the materials in the loop; or	40 CFR 146.90(c)(2)		

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Using an alternative method approved by the Director;	40 CFR 146.90(c)(3)		
Periodic monitoring of the ground water quality and geochemical changes above the confining zone(s) that may be a result of carbon dioxide movement through the confining zone(s) or additional identified zones including:	40 CFR 146.90(d)		
The location and number of monitoring wells based on specific information about the geologic sequestration project, including injection rate and volume, geology, the presence of artificial penetrations, and other factors; and	40 CFR 146.90(d)(1)		
The monitoring frequency and spatial distribution of monitoring wells based on baseline geochemical data that has been collected under §146.82(a)(6) and on any modeling results in the area of review evaluation required by §146.84(c).	40 CFR 146.90(d)(2)		
A demonstration of external mechanical integrity pursuant to $\$146.89(c)$ at least once per year until the injection well is plugged; and, if required by the Director, a casing inspection log pursuant to requirements at $\$146.89(d)$ at a frequency established in the testing and monitoring plan;	40 CFR 146.90(e)		
A pressure fall-off test at least once every five years unless more frequent testing is required by the Director based on site-specific information;	40 CFR 146.90(f)		
Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using:	40 CFR 146.90(g)		
Direct methods in the injection zone(s); and,	40 CFR 146.90(g)(1)		
Indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines, based on site-specific geology, that such methods are not appropriate;	40 CFR 146.90(g)(2)		
The Director may require surface air monitoring and/or soil gas monitoring to detect movement of carbon dioxide that could endanger a USDW.	40 CFR 146.90(h)		
Design of Class VI surface air and/or soil gas monitoring must be based on potential risks to USDWs within the area of review;	40 CFR 146.90(h)(1)		

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The monitoring frequency and spatial distribution of surface air monitoring and/or soil gas monitoring must be decided using baseline data, and the monitoring plan must describe how the proposed monitoring will yield useful information on the area of review delineation and/or compliance with standards under §144.12 of this chapter;	40 CFR 146.90(h)(2)		
If an owner or operator demonstrates that monitoring employed under §§98.440 to 98.449 of this chapter (Clean Air Act, 42 U.S.C. 7401 et seq.) accomplishes the goals of (h)(1) and (2) of this section, and meets the requirements pursuant to §146.91(c)(5), a Director that requires surface air/soil gas monitoring must approve the use of monitoring employed under §§98.440 to 98.449 of this chapter. Compliance with §§98.440 to 98.449 of this chapter pursuant to this provision is considered a condition of the Class VI permit;	40 CFR 146.90(h)(3)		
Any additional monitoring, as required by the Director, necessary to support, upgrade, and improve computational modeling of the area of review evaluation required under §146.84(c) and to determine compliance with standards under §144.12 of this chapter;	40 CFR 146.90(i)		
The owner or operator shall periodically review the testing and monitoring plan to incorporate monitoring data collected under this subpart, operational data collected under §146.88, and the most recent area of review reevaluation performed under §146.84(e). In no case shall the owner or operator review the testing and monitoring plan less often than once every five years. Based on this review, the owner or operator shall submit an amended testing and monitoring plan or demonstrate to the Director that no amendment to the testing and monitoring plan is needed. Any amendments to the testing and monitoring plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at §§144.39 or 144.41 of this chapter, as appropriate. Amended plans or demonstrations shall be submitted to the Director as follows:	40 CFR 146.90(j)		
Within one year of an area of review reevaluation;	40 CFR 146.90(j)(1)		
Following any significant changes to the facility, such as addition of monitoring wells or newly permitted injection wells within the	40 CFR 146.90(j)(2)		

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area of review, on a schedule determined by the Director; or			
When required by the Director.	40 CFR 146.90(j)(3)		
A quality assurance and surveillance plan for all testing and monitoring requirements.	40 CFR 146.90(k)		
40 CFR 146.91 Reporting requirements.			
The owner or operator must, at a minimum, provide, as specified in paragraph (e) of this section, the following reports to the Director, for each permitted Class VI well:	40 CFR 146.91		
Semi-annual reports containing:	40 CFR 146.91(a)		
Any changes to the physical, chemical, and other relevant characteristics of the carbon dioxide stream from the proposed operating data;	40 CFR 146.91(a)(1)		
Monthly average, maximum, and minimum values for injection pressure, flow rate and volume, and annular pressure;	40 CFR 146.91(a)(2)		
A description of any event that exceeds operating parameters for annulus pressure or injection pressure specified in the permit;	40 CFR 146.91(a)(3)		
A description of any event which triggers a shut-off device required pursuant to §146.88(e) and the response taken;	40 CFR 146.91(a)(4)		
The monthly volume and/or mass of the carbon dioxide stream injected over the reporting period and the volume injected cumulatively over the life of the project;	40 CFR 146.91(a)(5)		
Monthly annulus fluid volume added; and	40 CFR 146.91(a)(6)		
The results of monitoring prescribed under §146.90.	40 CFR 146.91(a)(7)		
Report, within 30 days, the results of:	40 CFR 146.91(b)		
Periodic tests of mechanical integrity;	40 CFR 146.91(b)(1)		
Any well workover; and,	40 CFR 146.91(b)(2)		
Any other test of the injection well conducted by the permittee if required by the Director.	40 CFR 146.91(b)(3)		
Report, within 24 hours:	40 CFR 146.91(c)		
Any evidence that the injected carbon dioxide stream or associated	40 CFR 146.91(c)(1)		

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pressure front may cause an endangerment to a USDW;			
Any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between USDWs;	40 CFR 146.91(c)(2)		
Any triggering of a shut-off system (i.e., down-hole or at the surface);	40 CFR 146.91(c)(3)		
Any failure to maintain mechanical integrity; or.	40 CFR 146.91(c)(4)		
Pursuant to compliance with the requirement at §146.90(h) for surface air/soil gas monitoring or other monitoring technologies, if required by the Director, any release of carbon dioxide to the atmosphere or biosphere.	40 CFR 146.91(c)(5)		
Owners or operators must notify the Director in writing 30 days in advance of:	40 CFR 146.91(d)		
Any planned well workover;	40 CFR 146.91(d)(1)		
Any planned stimulation activities, other than stimulation for formation testing conducted under §146.82; and	40 CFR 146.91(d)(2)		
Any other planned test of the injection well conducted by the permittee.	40 CFR 146.91(d)(3)		
Regardless of whether a State has primary enforcement responsibility, owners or operators must submit all required reports, submittals, and notifications under subpart H of this part to EPA in an electronic format approved by EPA.	40 CFR 146.91(e)		
Records shall be retained by the owner or operator as follows:	40 CFR 146.91(f)		
All data collected under §146.82 for Class VI permit applications shall be retained throughout the life of the geologic sequestration project and for 10 years following site closure.	40 CFR 146.91(f)(1)		
Data on the nature and composition of all injected fluids collected pursuant to \$146.90(a) shall be retained until 10 years after site closure. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period.	40 CFR 146.91(f)(2)		
Monitoring data collected pursuant to §146.90(b) through (i) shall be retained for 10 years after it is collected.	40 CFR 146.91(f)(3)		_

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Well plugging reports, post-injection site care data, including, if appropriate, data and information used to develop the demonstration of the alternative post-injection site care timeframe, and the site closure report collected pursuant to requirements at \$\$146.93(f) and (h) shall be retained for 10 years following site closure.	40 CFR 146.91(f)(4)		
The Director has authority to require the owner or operator to retain any records required in this subpart for longer than 10 years after site closure.	40 CFR 146.91(f)(5)		
40 CFR 146.92 Injection well plugging.			
Prior to the well plugging, the owner or operator must flush each Class VI injection well with a buffer fluid, determine bottomhole reservoir pressure, and perform a final external mechanical integrity test.	40 CFR 146.92(a)		
Well Plugging Plan. The owner or operator of a Class VI well must prepare, maintain, and comply with a plan that is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The well plugging plan must be submitted as part of the permit application and must include the following information:	40 CFR 146.92(b)		
Appropriate tests or measures for determining bottomhole reservoir pressure;	40 CFR 146.92(b)(1)		
Appropriate testing methods to ensure external mechanical integrity as specified in §146.89;	40 CFR 146.92(b)(2)		
The type and number of plugs to be used;	40 CFR 146.92(b)(3)		
The placement of each plug, including the elevation of the top and bottom of each plug;	40 CFR 146.92(b)(4)		
The type, grade, and quantity of material to be used in plugging. The material must be compatible with the carbon dioxide stream; and	40 CFR 146.92(b)(5)		
The method of placement of the plugs.	40 CFR 146.92(b)(6)		
Notice of intent to plug. The owner or operator must notify the Director in writing pursuant to \$146.91(e), at least 60 days before	40 CFR 146.92(c)		

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plugging of a well. At this time, if any changes have been made to the original well plugging plan, the owner or operator must also provide the revised well plugging plan. The Director may allow for a shorter notice period. Any amendments to the injection well plugging plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at §§144.39 or 144.41 of this chapter, as appropriate.			
Plugging report. Within 60 days after plugging, the owner or operator must submit, pursuant to §146.91(e), a plugging report to the Director. The report must be certified as accurate by the owner or operator and by the person who performed the plugging operation (if other than the owner or operator.) The owner or operator shall retain the well plugging report for 10 years following site closure.	40 CFR 146.92(d)		
40 CFR 146.93 Post-injection site care and site closure.			
The owner or operator of a Class VI well must prepare, maintain, and comply with a plan for post-injection site care and site closure that meets the requirements of paragraph (a)(2) of this section and is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.	40 CFR 146.93(a)		
The owner or operator must submit the post-injection site care and site closure plan as a part of the permit application to be approved by the Director.	40 CFR 146.93(a)(1)		
The post-injection site care and site closure plan must include the following information:	40 CFR 146.93(a)(2)		
The pressure differential between pre-injection and predicted post-injection pressures in the injection zone(s);	40 CFR 146.93(a)(2)(i)		
The predicted position of the carbon dioxide plume and associated pressure front at site closure as demonstrated in the area of review evaluation required under §146.84(c)(1);	40 CFR 146.93(a)(2)(ii)		
A description of post-injection monitoring location, methods, and proposed frequency;	40 CFR 146.93(a)(2)(iii)		
A proposed schedule for submitting post-injection site care	40 CFR 146.93(a)(2)(iv)		

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monitoring results to the Director pursuant to §146.91(e); and,			
The duration of the post-injection site care timeframe and, if approved by the Director, the demonstration of the alternative post-injection site care timeframe that ensures non-endangerment of USDWs.	40 CFR 146.93(a)(2)(v)		
Upon cessation of injection, owners or operators of Class VI wells must either submit an amended post-injection site care and site closure plan or demonstrate to the Director through monitoring data and modeling results that no amendment to the plan is needed. Any amendments to the post-injection site care and site closure plan must be approved by the Director, be incorporated into the permit, and are subject to the permit modification requirements at §§144.39 or 144.41 of this chapter, as appropriate.	40 CFR 146.93(a)(3)		
At any time during the life of the geologic sequestration project, the owner or operator may modify and resubmit the post-injection site care and site closure plan for the Director's approval within 30 days of such change.	40 CFR 146.93(a)(4)		
The owner or operator shall monitor the site following the cessation of injection to show the position of the carbon dioxide plume and pressure front and demonstrate that USDWs are not being endangered.	40 CFR 146.93(b)		
Following the cessation of injection, the owner or operator shall continue to conduct monitoring as specified in the Directorapproved post-injection site care and site closure plan for at least 50 years or for the duration of the alternative timeframe approved by the Director pursuant to requirements in paragraph (c) of this section, unless he/she makes a demonstration under (b)(2) of this section. The monitoring must continue until the geologic sequestration project no longer poses an endangerment to USDWs and the demonstration under (b)(2) of this section is submitted and approved by the Director.	40 CFR 146.93(b)(1)		
If the owner or operator can demonstrate to the satisfaction of the Director before 50 years or prior to the end of the approved alternative timeframe based on monitoring and other site-specific data, that the geologic sequestration project no longer poses an endangerment to USDWs, the Director may approve an	40 CFR 146.93(b)(2)		

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amendment to the post-injection site care and site closure plan to reduce the frequency of monitoring or may authorize site closure before the end of the 50-year period or prior to the end of the approved alternative timeframe, where he or she has substantial evidence that the geologic sequestration project no longer poses a risk of endangerment to USDWs.			
Prior to authorization for site closure, the owner or operator must submit to the Director for review and approval a demonstration, based on monitoring and other site-specific data, that no additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs.	40 CFR 146.93(b)(3)		
If the demonstration in paragraph (b)(3) of this section cannot be made (i.e., additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs) at the end of the 50-year period or at the end of the approved alternative timeframe, or if the Director does not approve the demonstration, the owner or operator must submit to the Director a plan to continue post-injection site care until a demonstration can be made and approved by the Director.	40 CFR 146.93(b)(4)		
Demonstration of alternative post-injection site care timeframe. At the Director's discretion, the Director may approve, in consultation with EPA, an alternative post-injection site care timeframe other than the 50 year default, if an owner or operator can demonstrate during the permitting process that an alternative post-injection site care timeframe is appropriate and ensures non-endangerment of USDWs. The demonstration must be based on significant, site-specific data and information including all data and information collected pursuant to \$\\$146.82\$ and 146.83, and must contain substantial evidence that the geologic sequestration project will no longer pose a risk of endangerment to USDWs at the end of the alternative post-injection site care timeframe.	40 CFR 146.93(c)		
A demonstration of an alternative post-injection site care timeframe must include consideration and documentation of:	40 CFR 146.93(c)(1)		
The results of computational modeling performed pursuant to delineation of the area of review under §146.84;	40 CFR 146.93(c)(1)(i)		
The predicted timeframe for pressure decline within the injection	40 CFR 146.93(c)(1)(ii)		

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zone, and any other zones, such that formation fluids may not be forced into any USDWs; and/or the timeframe for pressure decline to pre-injection pressures;			
The predicted rate of carbon dioxide plume migration within the injection zone, and the predicted timeframe for the cessation of migration;	40 CFR 146.93(c)(1)(iii)		
A description of the site-specific processes that will result in carbon dioxide trapping including immobilization by capillary trapping, dissolution, and mineralization at the site;	40 CFR 146.93(c)(1)(iv)		
The predicted rate of carbon dioxide trapping in the immobile capillary phase, dissolved phase, and/or mineral phase;	40 CFR 146.93(c)(1)(v)		
The results of laboratory analyses, research studies, and/or field or site-specific studies to verify the information required in paragraphs (iv) and (v) of this section;	40 CFR 146.93(c)(1)(vi)		
A characterization of the confining zone(s) including a demonstration that it is free of transmissive faults, fractures, and micro-fractures and of appropriate thickness, permeability, and integrity to impede fluid (e.g., carbon dioxide, formation fluids) movement;	40 CFR 146.93(c)(1)(vii)		
The presence of potential conduits for fluid movement including planned injection wells and project monitoring wells associated with the proposed geologic sequestration project or any other projects in proximity to the predicted/modeled, final extent of the carbon dioxide plume and area of elevated pressure;	40 CFR 146.93(c)(1)(viii)		
A description of the well construction and an assessment of the quality of plugs of all abandoned wells within the area of review;	40 CFR 146.93(c)(1)(ix)		
The distance between the injection zone and the nearest USDWs above and/or below the injection zone; and	40 CFR 146.93(c)(1)(x)		
Any additional site-specific factors required by the Director.	40 CFR 146.93(c)(1)(xi)		
Information submitted to support the demonstration in paragraph (c)(1) of this section must meet the following criteria:	40 CFR 146.93(c)(2)		
All analyses and tests performed to support the demonstration must be accurate, reproducible, and performed in accordance with the established quality assurance standards;	40 CFR 146.93(c)(2)(i)		

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Estimation techniques must be appropriate and EPA-certified test protocols must be used where available;	40 CFR 146.93(c)(2)(ii)		
Predictive models must be appropriate and tailored to the site conditions, composition of the carbon dioxide stream and injection and site conditions over the life of the geologic sequestration project;	40 CFR 146.93(c)(2)(iii)		
Predictive models must be calibrated using existing information (e.g., at Class I, Class II, or Class V experimental technology well sites) where sufficient data are available;	40 CFR 146.93(c)(2)(iv)		
Reasonably conservative values and modeling assumptions must be used and disclosed to the Director whenever values are estimated on the basis of known, historical information instead of site-specific measurements;	40 CFR 146.93(c)(2)(v)		
An analysis must be performed to identify and assess aspects of the alternative post-injection site care timeframe demonstration that contribute significantly to uncertainty. The owner or operator must conduct sensitivity analyses to determine the effect that significant uncertainty may contribute to the modeling demonstration.	40 CFR 146.93(c)(2)(vi)		
An approved quality assurance and quality control plan must address all aspects of the demonstration; and,	40 CFR 146.93(c)(2)(vii)		
Any additional criteria required by the Director.	40 CFR 146.93(c)(2)(viii)		
Notice of intent for site closure. The owner or operator must notify the Director in writing at least 120 days before site closure. At this time, if any changes have been made to the original post-injection site care and site closure plan, the owner or operator must also provide the revised plan. The Director may allow for a shorter notice period.	40 CFR 146.93(d)		
After the Director has authorized site closure, the owner or operator must plug all monitoring wells in a manner which will not allow movement of injection or formation fluids that endangers a USDW.	40 CFR 146.93(e)		
The owner or operator must submit a site closure report to the Director within 90 days of site closure, which must thereafter be retained at a location designated by the Director for 10 years. The report must include:	40 CFR 146.93(f)		

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Documentation of appropriate injection and monitoring well plugging as specified in §146.92 and paragraph (e) of this section. The owner or operator must provide a copy of a survey plat which has been submitted to the local zoning authority designated by the Director. The plat must indicate the location of the injection well relative to permanently surveyed benchmarks. The owner or operator must also submit a copy of the plat to the Regional Administrator of the appropriate EPA Regional Office;	40 CFR 146.93(f)(1)		
Documentation of appropriate notification and information to such State, local and Tribal authorities that have authority over drilling activities to enable such State, local, and Tribal authorities to impose appropriate conditions on subsequent drilling activities that may penetrate the injection and confining zone(s); and	40 CFR 146.93(f)(2)		
Records reflecting the nature, composition, and volume of the carbon dioxide stream.	40 CFR 146.93(f)(3)		
Each owner or operator of a Class VI injection well must record a notation on the deed to the facility property or any other document that is normally examined during title search that will in perpetuity provide any potential purchaser of the property the following information:	40 CFR 146.93(g)		
The fact that land has been used to sequester carbon dioxide;	40 CFR 146.93(g)(1)		
The name of the State agency, local authority, and/or Tribe with which the survey plat was filed, as well as the address of the Environmental Protection Agency Regional Office to which it was submitted; and	40 CFR 146.93(g)(2)		
The volume of fluid injected, the injection zone or zones into which it was injected, and the period over which injection occurred.	40 CFR 146.93(g)(3)		
The owner or operator must retain for 10 years following site closure, records collected during the post-injection site care period. The owner or operator must deliver the records to the Director at the conclusion of the retention period, and the records must thereafter be retained at a location designated by the Director for that purpose.	40 CFR 146.93(h)		

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		Regulatory Text (document title, page	Different From Federal Requirement?
Federal Requirement	Federal Citation	number, section/paragraph)	Different From Federal Requirement.
40 CFR 146.94 Emergency and remedial response.	•		
As part of the permit application, the owner or operator must provide the Director with an emergency and remedial response plan that describes actions the owner or operator must take to address movement of the injection or formation fluids that may cause an endangerment to a USDW during construction, operation, and post-injection site care periods. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.	40 CFR 146.94(a)		
If the owner or operator obtains evidence that the injected carbon dioxide stream and associated pressure front may cause an endangerment to a USDW, the owner or operator must:	40 CFR 146.94(b)		
Immediately cease injection;	40 CFR 146.94(b)(1)		
Take all steps reasonably necessary to identify and characterize any release;	40 CFR 146.94(b)(2)		
Notify the Director within 24 hours; and	40 CFR 146.94(b)(3)		
Implement the emergency and remedial response plan approved by the Director.	40 CFR 146.94(b)(4)		
The Director may allow the operator to resume injection prior to remediation if the owner or operator demonstrates that the injection operation will not endanger USDWs.	40 CFR 146.94(c)		
The owner or operator shall periodically review the emergency and remedial response plan developed under paragraph (a) of this section. In no case shall the owner or operator review the emergency and remedial response plan less often than once every five years. Based on this review, the owner or operator shall submit an amended emergency and remedial response plan or demonstrate to the Director that no amendment to the emergency and remedial response plan is needed. Any amendments to the emergency and remedial response plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at \$\$144.39 or 144.41 of this chapter, as appropriate. Amended plans or demonstrations shall be submitted to the Director as follows:	40 CFR 146.94(d)		
Within one year of an area of review reevaluation;	40 CFR 146.94(d)(1)		

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Following any significant changes to the facility, such as addition of injection or monitoring wells, on a schedule determined by the Director; or	40 CFR 146.94(d)(2)		
When required by the Director.	40 CFR 146.94(d)(3)		
40 CFR 146.95 Class VI injection depth waiver requirements.			
This section sets forth information which an owner or operator seeking a waiver of the Class VI injection depth requirements must submit to the Director; information the Director must consider in consultation with all affected Public Water System Supervision Directors; the procedure for Director – Regional Administrator communication and waiver issuance; and the additional requirements that apply to owners or operators of Class VI wells granted a waiver of the injection depth requirements.	40 CFR 146.95		
In seeking a waiver of the requirement to inject below the lowermost USDW, the owner or operator must submit a supplemental report concurrent with permit application. The supplemental report must include the following,	40 CFR 146.95(a)		
A demonstration that the injection zone(s) is/are laterally continuous, is not a USDW, and is not hydraulically connected to USDWs; does not outcrop; has adequate injectivity, volume, and sufficient porosity to safely contain the injected carbon dioxide and formation fluids; and has appropriate geochemistry.	40 CFR 146.95(a)(1)		
A demonstration that the injection zone(s) is/are bounded by laterally continuous, impermeable confining units above and below the injection zone(s) adequate to prevent fluid movement and pressure buildup outside of the injection zone(s); and that the confining unit(s) is/are free of transmissive faults and fractures. The report shall further characterize the regional fracture properties and contain a demonstration that such fractures will not interfere with injection, serve as conduits, or endanger USDWs.	40 CFR 146.95(a)(2)		
A demonstration, using computational modeling, that USDWs above and below the injection zone will not be endangered as a result of fluid movement. This modeling should be conducted in conjunction with the area of review determination, as described in §146.84, and is subject to requirements, as described in §146.84(c), and periodic reevaluation, as described in §146.84(e).	40 CFR 146.95(a)(3)		

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A demonstration that well design and construction, in conjunction with the waiver, will ensure isolation of the injectate in lieu of requirements at 146.86(a)(1) and will meet well construction requirements in paragraph (f) of this section.	40 CFR 146.95(a)(4)		
A description of how the monitoring and testing and any additional plans will be tailored to the geologic sequestration project to ensure protection of USDWs above and below the injection zone(s), if a waiver is granted.	40 CFR 146.95(a)(5)		
Information on the location of all the public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review.	40 CFR 146.95(a)(6)		
Any other information requested by the Director to inform the Regional Administrator's decision to issue a waiver.	40 CFR 146.95(a)(7)		
To inform the Regional Administrator's decision on whether to grant a waiver of the injection depth requirements at §§144.6 of this chapter, 146.5(f), and 146.86(a)(1), the Director must submit, to the Regional Administrator, documentation of the following:	40 CFR 146.95(b)		
An evaluation of the following information as it relates to siting, construction, and operation of a geologic sequestration project with a waiver:	40 CFR 146.95(b)(1)		
The integrity of the upper and lower confining units;	40 CFR 146.95(b)(1)(i)		
The suitability of the injection zone(s) (e.g., lateral continuity; lack of transmissive faults and fractures; knowledge of current or planned artificial penetrations into the injection zone(s) or formations below the injection zone);	40 CFR 146.95(b)(1)(ii)		
The potential capacity of the geologic formation(s) to sequester carbon dioxide, accounting for the availability of alternative injection sites;	40 CFR 146.95(b)(1)(iii)		
All other site characterization data, the proposed emergency and remedial response plan, and a demonstration of financial responsibility;	40 CFR 146.95(b)(1)(iv)		
Community needs, demands, and supply from drinking water resources;	40 CFR 146.95(b)(1)(v)		
Planned needs, potential and/or future use of USDWs and non-	40 CFR 146.95(b)(1)(vi)		

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USDWs in the area;			
Planned or permitted water, hydrocarbon, or mineral resource exploitation potential of the proposed injection formation(s) and other formations both above and below the injection zone to determine if there are any plans to drill through the formation to access resources in or beneath the proposed injection zone(s)/formation(s);	40 CFR 146.95(b)(1)(vii)		
The proposed plan for securing alternative resources or treating USDW formation waters in the event of contamination related to the Class VI injection activity; and,	40 CFR 146.95(b)(1)(viii)		
Any other applicable considerations or information requested by the Director.	40 CFR 146.95(b)(1)(ix)		
Consultation with the Public Water System Supervision Directors of all States and Tribes having jurisdiction over lands within the area of review of a well for which a waiver is sought.	40 CFR 146.95(b)(2)		
Any written waiver-related information submitted by the Public Water System Supervision Director(s) to the (UIC) Director.	40 CFR 146.95(b)(3)		
Pursuant to requirements at \$124.10 of this chapter and concurrent with the Class VI permit application notice process, the Director shall give public notice that a waiver application has been submitted. The notice shall clearly state:	40 CFR 146.95(c)		
The depth of the proposed injection zone(s);	40 CFR 146.95(c)(1)		
The location of the injection well(s);	40 CFR 146.95(c)(2)		
The name and depth of all USDWs within the area of review;	40 CFR 146.95(c)(3)		
A map of the area of review;	40 CFR 146.95(c)(4)		
The names of any public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review; and,	40 CFR 146.95(c)(5)		
The results of UIC-Public Water System Supervision consultation required under paragraph (b)(2) of this section.	40 CFR 146.95(c)(6)		
Following public notice, the Director shall provide all information received through the waiver application process to the Regional Administrator. Based on the information provided, the Regional Administrator shall provide written concurrence or non-	40 CFR 146.95(d)		

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concurrence regarding waiver issuance.			
If the Regional Administrator determines that additional information is required to support a decision, the Director shall provide the information. At his or her discretion, the Regional Administrator may require that public notice of the new information be initiated.	40 CFR 146.95(d)(1)		
In no case shall a Director of a State-approved program issue a waiver without receipt of written concurrence from the Regional Administrator.	40 CFR 146.95(d)(2)		
If a waiver is issued, within 30 days of waiver issuance, EPA shall post the following information on the Office of Water's Web site:	40 CFR 146.95(e)		
The depth of the proposed injection zone(s);	40 CFR 146.95(e)(1)		
The location of the injection well(s);	40 CFR 146.95(e)(2)		
The name and depth of all USDWs within the area of review;	40 CFR 146.95(e)(3)		
A map of the area of review;	40 CFR 146.95(e)(4)		
The names of any public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review; and	40 CFR 146.95(e)(5)		
The date of waiver issuance.	40 CFR 146.95(e)(6)		
Upon receipt of a waiver of the requirement to inject below the lowermost USDW for geologic sequestration, the owner or operator of the Class VI well must comply with:	40 CFR 146.95(f)		
All requirements at §§146.84, 146.85, 146.87, 146.88, 146.89, 146.91, 146.92, and 146.94;	40 CFR 146.95(f)(1)		
All requirements at §146.86 with the following modified requirements:	40 CFR 146.95(f)(2)		
The owner or operator must ensure that Class VI wells with a waiver are constructed and completed to prevent movement of fluids into any unauthorized zones including USDWs, in lieu of requirements at §146.86(a)(1).	40 CFR 146.95(f)(2)(i)		
The casing and cementing program must be designed to prevent the movement of fluids into any unauthorized zones including USDWs in lieu of requirements at §146.86(b)(1).	40 CFR 146.95(f)(2)(ii)		

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The surface casing must extend through the base of the nearest USDW directly above the injection zone and be cemented to the surface; or, at the Director's discretion, another formation above the injection zone and below the nearest USDW above the injection zone.	40 CFR 146.95(f)(2)(iii)		
All requirements at \$146.90 with the following modified requirements:	40 CFR 146.95(f)(3)		
The owner or operator shall monitor the groundwater quality, geochemical changes, and pressure in the first USDWs immediately above and below the injection zone(s); and in any other formations at the discretion of the Director.	40 CFR 146.95(f)(3)(i)		
Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using direct methods to monitor for pressure changes in the injection zone(s); and, indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines, based on site-specific geology, that such methods are not appropriate.	40 CFR 146.95(f)(3)(ii)		
All requirements at §146.93 with the following, modified post- injection site care monitoring requirements:	40 CFR 146.95(f)(4)		
The owner or operator shall monitor the groundwater quality, geochemical changes and pressure in the first USDWs immediately above and below the injection zone; and in any other formations at the discretion of the Director.	40 CFR 146.95(f)(4)(i)		
Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using direct methods in the injection zone(s); and indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines based on site-specific geology, that such methods are not appropriate;	40 CFR 146.95(f)(4)(ii)		
Any additional requirements requested by the Director designed to ensure protection of USDWs above and below the injection zone(s).	40 CFR 146.95(f)(5)		

